



BANK OF MCQS

ETEA PAST PAPER YEARWISE

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Since 2016



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ETEA Medical 2019

<p>1) The genome of influenza virus is made up of</p> <p>a) single stranded RNA b) double stranded RNA c) single strand DNA d) double stranded RNA</p> <p>ans; a</p>	<p>b) photosystem c) photosynthetic cluster arrangements d) calvin system</p> <p>ans; b</p>
<p>2) Galantamine hydrobromide is a compound derived from</p> <p>a) cannabis b) Coca c) english yew d) daffodil</p> <p>ans; d</p>	<p>7) Amphibians are poikilotherms, therefore they use to hibernate in</p> <p>a) winter b) summer c) autumn d) spring</p> <p>ans; a</p>
<p>3) Mark the correct match</p> <p>a) haemophilia – blood cancer b) SA node – pacemaker c) ECG-Brain d) alpha cell- insulin</p> <p>ans; b</p>	<p>8) All of the following are macronutrient except</p> <p>a) Cu ions b) Ca ions c) Mg ions d) K ions</p> <p>ans; a</p>
<p>4) Cells which kills cells that display foreign motifs on their surface are;</p> <p>a) platelets b) cytotoxic t-cells c) antigens d) red blood cells</p> <p>ans; b</p>	<p>9) Sadia wore her rain boots; _____ her feet stayed dry during the storm.</p> <p>a) however b) therefore c) on the other hand d) still</p> <p>ans; b</p>
<p>5) Chitin is a:</p> <p>a) lipoprotein b) polysaccharides c) glycoprotein d) phospholipids</p> <p>ans: b</p>	<p>10) Anum asked me, "did you see the drama on television, last night" [choose the correct indirect speech]</p> <p>a) Anum asked me whether I saw the dram on television the earlier night. b) Anum asked me whether I had seen the drama on television the earlier night. c) Anum asked me did I see the drama on television the last night. d) Anum asked me whether I had</p>
<p>6) Organization of photosynthetic pigment into clusters is ;</p> <p>a) photosyntheises</p>	



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seen the drama on television last night.	d) lower atmospheric pressure ans; d reason: at higher altitude atmospheric pressure is lower so water boils at high temperature.
11) A molecule which contains two lone pairs and two bond pairs of electrons in valence shell of central atom, geometrical shape of molecules will be; a) tetrahedral b) trigonal pyramidal c) angular d) linear ans; c	15) Substance that has sharp melting point in the following is . a) gemstone b) coal tar c) glass d) diamond ans; d reason; as compared to amorphous solids , crystalline solids have sharp melting point , so here crystalline solid is diamond, others options are amorphous.
12) Quantum number which describes the orientation of orbitals in three dimensional space is a) spin quantum number b) azimuthal quantum number c) magnetic quantum number d) principal quantum number ans; c	16) Which one of the following pair is an example of completely immiscible liquids a) alcohol and water b) alcohol and ether c) water and ether d) carbon disulphide and water ans;d reason; immiscible liquids are a. carbon disulphide and water b. benzene and water
13) Which one of the following gas has the highest rate of diffusion at same temperature and pressure? a) HCL b) CO ₂ c) C ₂ H ₂ d) C ₂ H ₆ ans; c reason ; because C ₆ H ₆ has least molecular mass than other and rate of diffusion is inversely proportional the molecular mass, this is according to the graham law of diffusion.	17) Newton-second is the unit of; a) work b) angular momentum c) power d) linear momentum ans; d reason; $p = mv$ $p = m at = Ft = N s$
14) At higher altitude , the boiling point of water is less than 100c, this is because of a) higher atmospheric pressure b) weak hydrogen bonding c) no change in atmospheric pressure	18) The dimension of electric dipole is a) [M ³ L ² T ⁰ A ¹] b) [M ⁰ L ¹ T ¹ A ¹]



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<p>c) [M0 L1 T1 A0] d) [M2 L1 T3 A2] ans; b reason ; $p = qd = Itd$ $= A s m = [M0 L1 T1 A1]$</p>	<p>ans; c</p>
<p>19) If the velocity of the body become half, then kinetic energy of the body becomes; a) one forth b) double c) four times d) half ans; a reason; $K.E = 1/2 mv^2$ $k.E' = 1/2 m (v/2)^2$ $k.E' = 1/2 m v^2 /4$ $K.E' = 1/4 [1/2 mv^2]$ $K.E' = 1/4 K.E$</p>	<p>23) Some marine fishes possesses salt excreting organs known as; a)thyroid gland b)pitutary gland c)adrenal gland d) rectal gland ans; d reason ; rectal glad secretes salts in fishes.</p>
<p>20) The angular acceleration of second hand minute of watch is; a) π rad/sec² b)2π rad/sec² c)$\pi/2$ rad/sec² d)non of the above</p>	<p>24) Tetanus is infection of a)respiratory system b)nervous system c) circulatory system d)bones and muscles ans; b reason ;tetanus is infections f nervous system and symptoms appear in joints and muscles.</p>
<p>21) Purkinji fibers are connected with the impulse conducting system of: a)heart b)brain c)skin d)nephron ans; a reason ; these fibres are present in the heart and conduct impulse.</p>	<p>25) _____ regulate the body temperature? a) hypothalamus b) thalamus c) hippocampus d) amygdala</p>
<p>22) The alveoli represent total surface area of A)10-30 m b)30-60 m c)70-90 m d)90-110 m</p>	<p>26) A man had to face interview, but during his first five minutes before the interview he experiences sweating, increase heart rate and respiration, which hormone is responsible for his restlessness a) adrenocorticotrophic hormone b) insulin and glucagon c) epinephrine and norepinephrine d) aldosterone ans; c reason; epinephrine and norepinephrine control stress conditions</p>



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- 27) Hypothalamus connected to pituitary gland via;
a) nerves
b) infundibulum
c) blood
d) no connection
ans; b
reason ; hypothalamus connect to pituitary gland through infundibulum
- 28) 2nd meiotic division in oocyte is completed;
a) when oocyte is fertilized by sperm
b) when ovum is discharged from ovary
c) just before fertilization
d) before the onset of menstruation
- 29) Don't make so much noise, Farrah ____ to study for her ESL test.
a) Try b) tries
c) tried d) is trying
- 30) Zara changed the flat tire. Choose the passive voice
a) The flat tire was changed by Zara
b) The flat tire is changed by Zara
c) The flat tire has been changed by Zara
d) The flat tire had changed by Zara
- 31) Which one of the following is not a state function?
a) Work
b) enthalpy
c) internal energy
d) pressure
- 32) How many elements are there in the 3rd period of periodic table?
a) 18 b) 8
c) 32 d) 10
- 33) The number of isomers of pentane is
a) 2 b) 4
c) 5 d) 3
- 34) When ammonium cyanide (NH_4CN) salt is dissolved in water the solution will be
a) Neutral b) acidic
c) basic d) both b and c
- 35) The enzyme which is found in saliva, accelerates the conversion of starch into sugar is;
a) Pepsin b) thrombin
c) Ptyalin d) Fumarase
- 36) Consider the reversible reaction.
 $\text{N}_2 + 2\text{NH}_3 \rightleftharpoons 2\text{NH}_3 + \text{Heat}$
The yield of NH_3 will be maximum at
a) High temperature and low pressure
b) High temperature and high pressure
c) Low temperature and low pressure
d) Low temperature and high pressure
- 37) The viscous drag on a small spherical body (moving with slow speed v) is proportional to
a) v b) \sqrt{v}
c) $1/\sqrt{v}$ d) v^2
- 38) the transverse nature of light is shown by
a) interference of light
b) refraction of light
c) polarization of light
d) dispersion of light



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- 39) An electron is moving along the axis of a solenoid carrying a current. Which of the following is a correct statement about the magnetic force acting on the electron?
- a) The force acts radially inwards
 - b) The force acts radially downwards
 - c) The force acts in the direction of motion
 - d) No force acts
- 40) The motional EMF depends upon
- a) Strength of magnetic field
 - b) Speed of the conductor
 - c) Length of conductor
 - d) All of the above
- 41) A pure breeding tall plant was crossed to dwarf plant. What would be the probability of "T genotype in F2?
- a) 0
 - b) 0.25
 - c) 0.5
 - d) 0.75
- 42) The number of human spinal nerves is
- a) 60
 - b) 62
 - c) 64
 - d) 66
- 43) Diphtheria vaccines is an example of
- a) Inactivated vaccine
 - b) toxoid vaccine
 - c) subunit vaccine
 - d) live, attenuated vaccine.
- 44) Which one of the following items gives its correct total number?
- a) Cervical vertebrae-7
 - b) floating ribs in human-3
 - c) auditory ossicles - 8
 - d) cranium bones -4
- 45) find mismatch
- a) thyroid gland-Ty and T
 - b) parathyroid gland- calcitonin
 - c) pancreas-insulin
 - d) Gonads-Testes and ovaries
- 46) The simplest form of learning is
- a) Imprinting
 - b) insight learning
 - c) Latent learning
 - d) habituation
- 47) To the end of first trimesters the embryo can now technically describe as a
- a) Zygote
 - b) infant
 - c) toddler
 - d) fetus
- 48) How many pairs of homologous chromosomes are present in *Pisum sativum* ?
- a) Seven pairs
 - b) eight pairs
 - c) nine pairs
 - d) ten pairs
- 49) Sorry, she can't come to the phone. She _____ bath
- a) Is having
 - b) having
 - c) have
 - d) has
- 50) Choose the word nearest in meaning to "ENIGMA"
- a) Evaluation
 - b) puzzle
 - c) answer
 - d) account
- 51) When zinc electrode is coupled with copper electrode in a galvanic cell
- a) Reduction takes place at zinc electrode
 - b) Oxidation takes place at copper electrode
 - c) Reduction takes place at copper electrode
 - d) Both a and b
- 52) Ozone layer in upper atmosphere is being destroyed by
- a) Chlorofluorocarbon
 - b) freon



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- c) smog d) both a and b
-
- 53)** In the complex, potassium hexacyanoferrate (III). $K_3Fe(CN)_6$, the coordination number of Fe is;
a) 9 b) 3
c) 6 d) 5
-
- 54)** The compound which has the highest boiling point in the following is
a) Methyl chloride b) methyl iodide
c) methyl bromide d) both a and b
-
- 55)** Which one of the following is addition polymer!
a) Nylon b) PVC
c) polythene d) both b and c
-
- 56)** Photochemical smog is primarily caused by
a) O_3 b) NO_2
c) SO_3 d) CO_2
-
- 57)** Which one of the following physical quantity does not have dimension of force per unit area?
a) Stress b) strain
c) young modulus d) pressure
-
- 58)** In case of germanium, the value of potential barrier develops across the depletion region is
a) 0V b) 0.3V
c) 0.7V d) 0.9V
-
- 59)** Electron microscope makes practical use of the
a) Particle nature of electron
b) Wave nature of electron
c) Dual nature of electron
d) None of the above
-
- 60)** Projectile is thrown in such a way that its maximum height equals to its range, the angle of projection is
a) $\tan^{-1} 45$ b) $\tan^{-1} 60$
c) $\tan^{-1} 30$ d) None
-
- 61)** 61. The percentage of fresh water on earth is
a) 1% b) 3%
c) 5% d) 7%
-
- 62)** Recombinants contains DNA from
a) 2 different sources b) single source
c) 2 same sources d) 3 same sources
-
- 63)** The inner surface of a kidney has a deep notch called
a) Renal pelvis b) Hilus
c) medulla d) Pyramid
-
- 64)** _____ is considered as chief structural and functional unit of nervous system.
a) Cell b) neuron
c) nephron d) brain
-
- 65)** The bacteriophage replicates only inside the
a) Animal cell b) bacterial cell
c) fungal cell d) both a and b
-
- 66)** _____ is stored in animal cells
a) Starch b) cellulose
c) sucrose d) glycogen
-
- 67)** A bacterium which has a group of two or more flagella inserted at one pole of the cell
a) Monotrichous b) peritrichous
c) lophotrichous d) amphitrichous
-
- 68)** The gametophyte of Lycopsidea is mainly



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a) Aerial b) partial aerial and partially underground c) underground d) Photosynthetic	c) $(\text{CH}_3)_2\text{CO}$ d) have equal reactivity
69) When I went back to my home town three years ago, I found that a lot of changes a) Had taken place b) have taken place c) Are taken place d) were taken place	75) Which compound shows the highest boiling point? a) CH_3COOH b) $\text{C}_2\text{H}_5\text{OH}$ c) $\text{C}_2\text{H}_5-\text{O}-\text{C}_2\text{H}_5$ d) $(\text{CH}_3\text{CH}_2)_3\text{N}$
70) Choose the correct sentence a) He is clever but he lacks experience b) He is clever but he is lacking experience. c) He is clever but he lacked experience d) He is clever but he is lack experience	76) Which of the following pollutant decolorize the skin? a) mercury b) arsenic c) lead d) cadmium
71) Which of the following is not the major source of organic compound? a) Natural gas b) petroleum c) Coal d) ammoniacal liquor	77) Car "X" is travelling at half speed of car "Y" and mass of car "X" is twice as compared to mass of car "Y" Which of the following statement is correct a) Car "X" has half the kinetic energy of car "Y" b) Car "X" has one quarter the K.E of car "Y" c) Car "X" has twice K.E of car "Y" d) The two cars have the same KE
72) Which one of the following concentration units is temperature dependent a) Molality b) mole fraction c) Molarity d) both a and b	78) If the wavelength of a transverse is 2cm and the period is 2 sec then the wave speed in CGS is a) 0.1cms-1 b) 0.2cms-1 c) 11 cms-1 d) 1 cms-1
73) Tertiary alcohols are not oxidized into carbon compounds because a) They contain more alkyl group b) They have no alpha-hydrogen c) Suitable oxidizing agent is not available d) None of the above	79) A car battery has EMF of 12 volts and internal resistance 5×10 ohm. If it draws 60 ampere current, then terminal voltage of the battery will be a) 5 volts b) 3 volts c) 15 volts d) 9 volts
74) Which one is more reactive? a) HCHO b) CH_3CHO	80) The cyclotron frequency of an electron projected with velocity V perpendicular to a magnetic field B is given



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- a) $f = \frac{mB}{\pi C}$ b) $f =$
 $2\pi eB/m$
c) $f = \frac{eB}{2\pi m}$ d) $f =$
 $2\pi c/mB$
- 81)** Opossum and koala bear belong to sub class
a) Prototheria b) cutheria
c) metatheria d)
- 82)** The form of immunity which inherit from mother
a) Active immunity
b) passive immunity
c) acquired immunity
d) innate immunity
- 83)** The least toxic excretory product is
a) Ammonia b) urea
c) uric acid d) fatty acid
- 84)** Chemically hormones are
a) Carbohydrates b) proteins
c) Steroids d) both b and c
- 85)** DNA polymerase III works always in
a) 5'-2' direction b) 5'-3' direction
c) 3'-5' direction d) 2'-5' direction
- 86)** The biogas plant is tank which is
a) 5-10 feet deep b) 10-15 feet deep
e) 15-20 feet deep
d) 20-25 feet deep
- 87)** Which wavelengths are mainly absorbed by chlorophyll?
a) Violet, blue and red
b) green and blue
c) Violet and orange
d) red and indigo
- 88)** For hepatitis B the incubation period is between
a) 4 and 20 weeks b) 6 and 20 weeks
c) 2-26 weeks d) 2-6 weeks
- 89)** Look! A hamster _____ by a cat
a) Has been chased b) was being chased
b) Is being chased d) is chased
- 90)** Choose the word opposite in meaning to "VOCIFEROUS"
a) Silent b) boisterous
c) blatant d) noisy
- 91)** Which contains more atoms?
a) 7 gram Mg b) 8 gram Na
c) 9 gram A d) all same
- 92)** Which contains highest percentage of nitrogen?
a) NO b) NO₂
c) N₂O d) N₂O₅
- 93)** Fe⁺² will form the most ionic bond with
a) N-3 b) S-2
c) P-3 d) F-1
- 94)** For exothermic reversible reaction activation energy for forward direction depends upon
a) Temperature b) nature of reactant
c) nature of product d) both a and b
- 95)** As the polarizing power of cation increases thermal stability of carbonates
a) Increases b) decreases
c) not dependent d) depends upon pressure
- 96)** Which one is more reactive?
a) Ester b) acid halide
c) amide d) acid anhydride
- 97)** if A. B = $\frac{1}{2}$, the angle between A and B is
a) Zero b) 300
c) 600 d) 900



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- 98) A train is 200 m long and is moving with uniform velocity of 36 km/hr, the time it will take to cross a bridge of 1km is
a) 100 sec b) 120 sec
c) 60 sec d) 50 sec
- 99) Choose the wrong statement. The escape velocity of a body from planet depend upon
a) The mass of a body b) the mass of the planet
c) the average radius of the planet
d) the density of the planet
- 100) In order to increase the stopping potential, there should be increase in
a) Intensity of radiation
b) Wavelength
c) Frequency of radiation
d) Both wavelength and intensity
- 101) Sulphur bacteria belongs to sub group of bacteria called
a) Beta-proteo bacteria
b) alpha proteobacteria
c) Gamma proteo bacteria
d) delta proteo bacteria
- 102) Nuclear mitosis occurs in
a) Plants b) animals
c) fungi d) Monera
- 103) Excess glucose is converted in the liver to glycogen in response to the hormone
a) Glucagon b) insulin
c) Bile d) both and b
- 104) During muscles relaxation the calcium ions are
a) Released from sarcoplasmic reticulum into Sarcoplasm
b) Forced back from sarcoplasm to sarcoplasmic reticulum
c) Further forced from sarcoplasmic reticulum into sarcoplasm
d) Neither released more nor forced back but remain constant
- 105) In male luteinizing hormone also known as
a) ACTH b) CSH
c) TRF d) MSH
- 106) Particular amino acid and RNA molecule binds together by the action of an enzyme named
a) tRNA synthetase
b) amino tRNA synthetase
c) tRNA ligase
d) aminoacyl tRNA synthetase
- 107) lipid bilayer makes the membrane differently permeable barrier that allows the transport of
a) ionic materials b) polar materials
c) non-polar materials d) Glycoproteins
- 108) the following are sexual reproduction methods in bacteria except
a) transformation b) transduction
c) binary fission d) conjugation
- 109) I'm sorry the house is not available any longer, it _____ to a timber tycoon
a) Was being sold b) will be sold
c) is sold d) has been sold
- 110) I always like to lean the side of mercy
a) Over b) one
c) towards d) about
- 111) Which of the following elements has lowest first ionization energy?
a) N b) O
c) C d) B



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<p>112) The anhydride of HClO_4 is a) ClO_3 b) ClO_2 c) Cl_2O_5 d) Cl_2O_7</p>	<p>energy stored in A is E, that is B is a) $E/2$ b) $2E$ c) E d) $E/4$</p>
<p>113) A gas diffuse 12 times as fast as hydrogen, its molecular mass is a) 50 amu b) 25 amu c) 16 amu d) 8 amu</p>	<p>120) The general form of path difference in Young's double slit experiment is its corresponding phase shift (in radians) is a) $m\pi$ b) $2m\pi$ c) $m\pi/2$ d) None of the above</p>
<p>114) Which one of the following ions has more electrons than protons and more protons than neutrons? a) D b) d- c) H- d) He</p>	<p>121) lichen is the symbiotic association of a fungus with a) bacteria b) algae c) other fungus d) animals</p>
<p>115) Ice and water is in equilibrium with each other. By increasing the pressure the equilibrium will shift in a) Forward b) reverse c) to all system at equilibrium d) None of the above</p>	<p>122) the possible reason (s) for cyanosis one of the congenital heart disease is a) formation of carboxy hemoglobin b) the high concentration of oxyhemoglobin c) low level of CO d) low level of hemoglobin</p>
<p>116) Steam causes severe burns than boiling water. It is due to a) Absence of hydrogen bonding b) High latent heat of vaporization c) Freely moving molecules d) Statement is incorrect</p>	<p>123) The deficiency of which micronutrient cause goiter formation? a) Iron b) zinc c) iodine d) sodium</p>
<p>117) Two meter high tank is full of water. A hole is made in the middle of the tank. The speed of efflux is a) 4.9m/s b) 9.8m/s c) 4.42 m/s d) 3.75 m/s</p>	<p>124) Phosphatases belong to which group of the following? a) Lyases b) ligases c) hydrolases d) none of the above.</p>
<p>118) A hail and a rain drop of same radius are released from same height, the rain drop will reach a) Before hail b) after hail c) at the same time d) none of the above</p>	<p>125) The ribosomes responsible for protein synthesis are present in the cell a) Floating in the cytosol b) Localized in the nucleus c) Bound to rough endoplasmic reticulum d) Both a and</p>
<p>119) Two springs A and B ($K_A=2 K_B$) are stretched by applying forces of equal magnitudes at the four ends. If the</p>	



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<p>126) Enzyme need a primer for the initiation of its function a) RNA polymerase b) DNA polymerase c) Primase d) Ligase</p>	<p>c) Ethanoic acid is more soluble in liquid ammonia than in water d) None of the above</p>
<p>127) The following histone proteins form a nucleosome complex except a) H1 b) H2A c) H2B d) H3</p>	<p>134) Which ions are used as catalyst in the reaction between persulfate ions and iodide ions? a) Lead b) iron c) copper d) chromium</p>
<p>128) The bond that is formed between two monosaccharide units is called a) ionic bond b) hydrogen bond c) peptide bond d) Glycosidic bond</p>	<p>135) Which one is stronger nucleophile? a) $C_2H_5O^-$ b) $C_2H_5S^-$ c) both are equally strong d) none of the above</p>
<p>129) They already some of the old ones and them more comfortable a) Repair, make b) repaired, made c) repaired, make d) repair, made</p>	<p>136) Which one of the following elements has the largest second ionization energy a) O b) F c) Na d) N</p>
<p>130) I was born in Peshawar but most of my childhood in the Mardan a) Spends b) have spent c) was spending d) is spending</p>	<p>137) An a particle is accelerated through a potential difference of 10 volts. Its K.E is a) 1 MeV b) 2 MeV c) 4 MeV d) 8 MeV</p>
<p>131) Which oxides of "K" contain more oxygen than its normal oxide? a) Peroxide b) super oxide c) both contain equal quantity d) none of the above</p>	<p>138) If there are n capacitors each of capacity "C" connected in parallel to "V" volt source then energy stored is equal to a) CV b) $\frac{1}{2} nCV^2$ c) CV^2 d) $CV^2/2n$</p>
<p>132) A gas decolorizes alkaline $KMnO_4$ solution but does not give any PPT with ammoniacal $AgNO_3$ a) Methane b) ethylene c) ethane d) None of the above</p>	<p>139) The electric field strength between a pair of plates is "E". if the separation of the plates is doubled and potential difference between the plates is increased by factor of four, the new field strength is a) E b) 2E c) 4E d) 8E</p>
<p>133) Why ethanoic acid is a stronger acid in the liquid ammonia than in water? a) Ammonia is stronger base than in water b) Ethanoic acid molecules form H-bonding with water</p>	<p>140) Two satellites of masses $3M$ and "M" orbit the earth in a circular orbit of radius Y and "3r" respectively,</p>



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the ratio of their speed is a) 1:1 b) $\sqrt{3} : 1$ c) 3:1 d) 9:1	e) 6 d) 8
141) The optimum pH of enzyme urease is a) 7.8-8.7 b) 7.0 c) 4.5 d) 8.0	149) _____ you win first place, you will receive a prize a) Whenever b) if c) unless d) so forth
142) Which statement about chlorophyll is not true? a) It contains terminal carbonyl group b) It contains phytyl tail c) It contains porphyrin ring d) It contains magnesium	150) The train was _____ a) Halt b) halted c) had halted d) has halted
143) In humans the disease symptoms develop during the a) Log phase b) lag phase c) growth phase d) decline phase	151) Which of the following species has the maximum number of unpaired electrons a) O ² b) O ²⁺ c) O ²⁻ d) O ²⁻²
144) Independent gametophyte and sporophyte are found in a) Selaginella b) Polytrichum c) Ectocarpus d) liverworts	152) A mixture of 10cm ³ of oxygen and 50cm ³ of hydrogen is sparked continuously. What is the maximum theoretical decrease in volume? a) 10cm ³ b) 15cm ³ c) 20cm ³ d) 30cm ³
145) Tmesipteris is an example of a) Horsetail b) club mosses c) psilopsida d) Pteropsida	153) The oxidation state of nitrogen in NH ₃ and NO ₂ are a) 3 and 5 b) +5 and 3 c) -3 and -3 d) zero
146) The larva formed during the life cycle of Annelida is a) Glochidium larva b) Bipinnaria larva c) trochophore larva d) tornaria larva	154) Which equation relates to the first ionization energy of bromine? a) Br(g) → Br ⁻ (g) + e ⁻ b) Br(g) → Br ⁺ (g) + e ⁻ c) $\frac{1}{2}$ Br ₂ (g) → Br ⁻ (g) + e ⁻ d) $\frac{1}{2}$ Br ₂ (g) → Br ⁺ (g) + e ⁻
147) Ebner's gland on the dorsal surface of the tongue secretes an enzyme a) Amylase b) Ptyalin c) Lingual lipase d) both a and b	155) Co-ordination number of [Co(en) ₂ Cl ₂] is; a) -2 b) 6 c) 4 d) None of the above
148) Antibodies consist of polypeptide chains a) 2 b) 4	



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<p>156) An olefin "X" on ozonolysis gives $\text{CH}_3\text{CH}_2\text{COCH}_3$ and CH_3COCH_3. The IUPAC name of X is.</p> <p>a) 2-butene b) 2-3 di methyl-2-pentene c) 2-Pentene d) 1-Hexene</p>	<p>d) radially symmetrical and diploblastic</p>
<p>157) Two wires A and B are made of same material. The wire A has length L and diameter R. while the wire B has length 2L. and diameter R/2. If the two wires are stretched by the same force, the elongation in A divided by elongation in B is;</p> <p>a) 1/8 b) 1/2 c) 4 d) 8</p>	<p>162) the scientific name of fresh water mussel is</p> <p>a) mytilus edulis b) loligo pealei c) anodonta grandis d) anodonta bairdi</p>
<p>158) A wire can sustain the weight of 20kg before breaking. If the wire is cut into two equal parts each part can sustain a weight of</p> <p>a) 10kg b) 20kg c) 40kg d) 80kg</p>	<p>163) potamogeton is an example of _____.</p> <p>a) xerophytes b) mesophytes c) hydrophytes d) halophytes</p>
<p>159) Which of the following is not EM wave</p> <p>a) Radio waves b) X-rays c) light waves d) sound waves</p>	<p>164) _____ stimulates fruits ripening.</p> <p>a) Cytokinin b) abscisic acid c) ethylene d) auxin</p>
<p>160) A shell of mass m moving with velocity v suddenly breaks into two pieces. The part having mass m/4 remains stationary. The velocity of the other shell will be</p> <p>a) v b) 2v c) 3v/4 d) 4v/3</p>	<p>165) A condition in which abnormally large volume of urine is produced is</p> <p>a) Polydipsia b) polyuria c) polyphagia d) polyanypsida</p>
<p>161) Platyhelminthes are</p> <p>a) Bilaterally symmetrical and diploblastic b) Bilaterally symmetrical and triploblastic c) radially symmetrical and triploblastic</p>	<p>166) The bulbourethral glands produce</p> <p>a) Acidic fluid b) alkaline fluid c) semen d) mucus</p>
<p>162) Acetabularia crenulata has _____ shaped cap</p> <p>a) Irregular b) umbrella c) regular d) disc</p>	<p>167) HIV destroys a type of defense cell in the body called a helper lymphocyte.</p> <p>a) TD4 b) T4 c) C4 d) CD4</p>
<p>163) He confided _____ me.</p> <p>a) About b) in c) on d) of</p>	



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170) He said, "you need not wait"
Choose the correct indirect speech
a) He said that I need not wait
b) He said you needed to wait
c) He said that wait was not needed by you.
d) He said that you must not wait

171) Which one is more soluble in water?
a) Secondary amines b) tertiary amines
c) quaternary amines d) all are insoluble

172) The number of peaks given by ethane thiol in NMR spectrum are
a) 2 b) 3
c) 4 d) None of the above.

173) C₄H₁₁N gives the type of isomerism
a) Metamerism b) optical isomerism
c) tautomerism d) None of the above

174) The incorrect statement regarding gas having high value of coefficient of attraction
a) Easy to be liquefied
b) having higher critical temperature
c) less soluble in water
d) none of the above

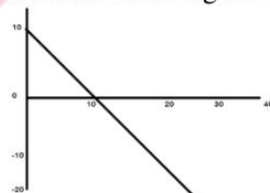
175) which one can form more acidic oxide?
a) Sc b) Mn
c) V d) Ti

176) 176. hydration of hydrocarbon give carbonyl compound, the general formula of that hydrocarbon is
a) C_nH_{2n+2} b) C_nH_{2n}
c) C_nH_{2n-2} d) both b and c

177) Two blocks "A" and "B" having masses 3kg and 4kg are raised to the same height from earth surface. The ratio of gravitational potential of "A" to that of "B" is
a) 3:4 b) 4:3
c) 1:1 d) None of the above

178) Heat and work are equivalent. This means
a) When we supply heat to a body we do work on
b) When we do work on a body we supply heat to it.
c) The temperature of a body can be increased by doing work on it
d) Heat and work are neither inter convertible

179) The velocity time plot for a particular moving on a straight line is shown in the figure



a) The particle has a constant acceleration
b) The particle has never turned around
c) The particle has zero displacement
d) The data is insufficient

180) Mark out the correct options
a) The energy of any small part of a string remains constant in a travelling wave.
b) The energy of any small part of a string remains constant in standing



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wave. c) The energies of all small parts of equal length are equal in a travelling wave. d) The energies of all the small parts of equal length are equal in a standing wave.	a) 81 c) 101	b) 98 d) 108
181) The safranin stain is suitable for a) Fungal hyphae b) Cytoplasm/cellulose c) blood cells d) Lignin	186) Horsetails are included in class a) Pteropsida b) Lycopsida c) Psilopsida d) Sphenopsida	
182) In the human skull the unpaired bones are a) Frontal, occipital, ethmoid and sphenoid b) Frontal, ethmoid, sphenoid and zygomatic c) Ethmoid, sphenoid zygomatic and frontal d) Temporal, Sphenoid, frontal and Ethmoid	187) Which one of the following bone is the only moveable portion of the skull? a) Maxilla b) frontal bone c) Mandible d) Zygomatic	
183) Functionally ___ pairs of cranial nerves are sensory in nature and ___ pairs are mixed in nature and ___ are motor in nature. a) 3,4 and 5 b) 4,5 and 3 c) 3,5 and 4 d) 4,3 and 5	188) Progesterone is secreted by a) Corpus Luteum b) Ripening follicles c) Uterine epithelium d) fertilized egg	
184) DNA fingerprinting refer to a) Techniques used for identification of finger prints of individuals b) Molecular analysis of profiles of DNA samples c) Analysis of DNA samples using imprinting devices d) Both a and	189) It is natural for us to exert our own success a) In b) Atc) against d) regarding	
185) Oleic acid is a fatty acid with 18 carbon atoms. It breaks down into 9 acetyl groups. It is estimated that these nine acetyl groups would generate ___ATP molecules	190) Be patient, please Choose the passive voice a) You are requested to be patient. b) You are ordered to be patient c) You are advised to be patient d) You are embarrassed to be patient	
	191) Consider reversibility in free radical substitution reaction alkane then Kc value is smallest for a) Initiation step b) propagation step c) Termination step d) all same	
	192) Ethylenediamine Diacetate is a) Didentate b) tridentate c) tetradentate d) hexadentate	



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193) Epoxide obtained from isobutylene is further hydrolyzed in the presence of acid. The final product is

- a) 2,3-butanediol!
- b) 1,2-butanediol
- c) 2-Methyl-1,2-propanediol
- d) all of them

194) In the direction of nitrogen in an organic compound. The appearance of Prussian blue coloration is due to the formation of

- a) $\text{Fe}_4(\text{Fe}(\text{CN})_6)_3$
- b) $\text{Na}_3[\text{Fe}(\text{CN})_6]$
- c) $\text{K}_3\text{Fe}(\text{CN})_6$
- d) None of the above

195) The bond angle in HS is less than H_2O . it is due to

- a) Small size of oxygen atom
- b) Greater E N of oxygen atom
- c) Oxygen contain two lone pairs of electrons
- d) All of the above

196) The auxochrome not concern with Metanil yellow dye

- a) $-\text{SO}_3\text{H}$
- b) $-\text{OH}$
- c) $-\text{NH}_2$
- d) both a and c

197) A system can be taken from the initial state P. V to the final state P_1V_1 to the final state P_2V_2 by two different methods. Let ΔQ and ΔW represent the heat given to the system and the work done by the system. Which of the following must be same in both the methods?

- a) ΔQ
- b) ΔW
- c) $\Delta Q + \Delta W$
- d) $\Delta Q - \Delta W$

198) At what angle two forces $2F$ and $\sqrt{2}F$ must act so that their resultant

is $F\sqrt{10}$;

- a) $\pi/4$
- b) $\pi/2$
- c) 2π
- d) non of the above

199) When 20 J of work was done on a gas. 40J of heat energy was released. If the initial internal energy of the gas was 70J. What is the final internal energy?

- a) 50 J
- b) 60J
- c) 90J
- d) 110J

200) Time required by the projectile to reach the summit point is

- a) $T = \sqrt{\frac{2H}{g}}$
- b) $T = \sqrt{\frac{3H}{g}}$
- c) $T = \sqrt{\frac{4H}{g}}$
- d) $T = \sqrt{\frac{H}{g}}$



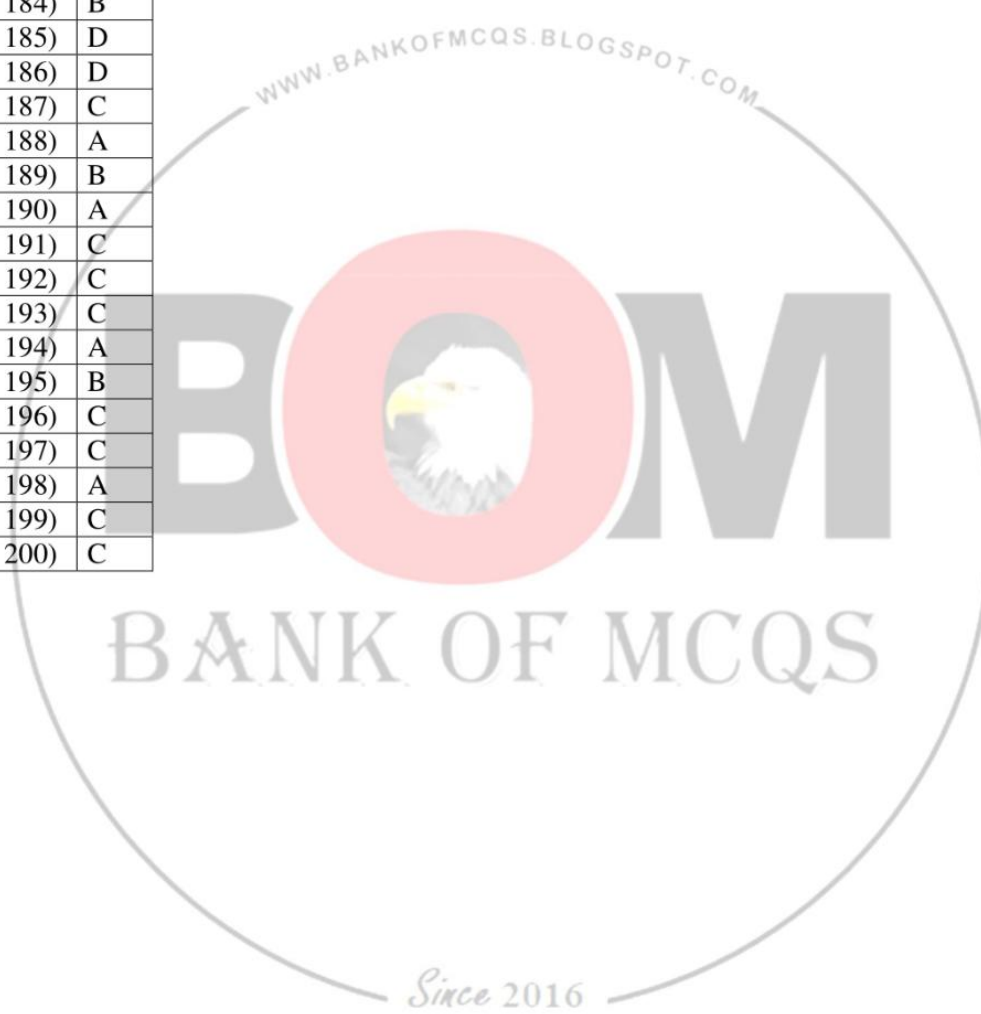
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Answer key

1)	A	37)	A	73)	B	109)	D	145)	C
2)	D	38)	C	74)	A	110)	B	146)	C
3)	B	39)	C	75)	A	111)	D	147)	C
4)	B	40)	D	76)	B	112)	D	148)	B
5)	B	41)	C	77)	A	113)	D	149)	B
6)	B	42)	B	78)	D	114)	C	150)	B
7)	A	43)	B	79)	D	115)	A	151)	A
8)	A	44)	A	80)	C	116)	B	152)	D
9)	B	45)	B	81)	C	117)	C	153)	A
10)	B	46)	D	82)	D	118)	B	154)	B
11)	C	47)	D	83)	C	119)	B	155)	B
12)	C	48)	A	84)	D	120)	B	156)	B
13)	C	49)	B	85)	B	121)	B	157)	A
14)	D	50)	B	86)	B	122)	A	158)	B
15)	D	51)	C	87)	A	123)	C	159)	D
16)	D	52)	D	88)	A	124)	C	160)	D
17)	D	53)	C	89)	C	125)	D	161)	B
18)	B	54)	B	90)	A	126)	B	162)	C
19)	A	55)	D	91)	B	127)	A	163)	C
20)	D	56)	B	92)	C	128)	D	164)	C
21)	A	57)	B	93)	D	129)	C	165)	B
22)	C	58)	B	94)	D	130)	B	166)	D
23)	D	59)	B	95)	B	131)	B	167)	D
24)	B	60)	D	96)	B	132)	B	168)	A
25)	A	61)	B	97)	C	133)	A	169)	B
26)	C	62)	A	98)	B	134)	B	170)	A
27)	B	63)	B	99)	A	135)	C	171)	C
28)	A	64)	B	100)	C	136)	C	172)	B
29)	D	65)	B	101)	C	137)	B	173)	A
30)	A	66)	D	102)	C	138)	B	174)	C
31)	A	67)	C	103)	B	139)	B	175)	B
32)	B	68)	D	104)	B	140)	B	176)	C
33)	D	69)	A	105)	B	141)	B	177)	C
34)	C	70)	A	106)	D	142)	A	178)	C
35)	C	71)	D	107)	C	143)	A	179)	C
36)	D	72)	C	108)	C	144)	A	180)	B

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181)	D
182)	A
183)	C
184)	B
185)	D
186)	D
187)	C
188)	A
189)	B
190)	A
191)	C
192)	C
193)	C
194)	A
195)	B
196)	C
197)	C
198)	A
199)	C
200)	C

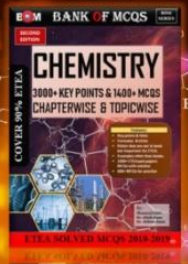




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Main Features:

- ✓ Topicwise Key points
- ✓ Topic wise MCQS with solution.
- ✓ Extra examples for ETEA.
- ✓ Important relations
- ✓ Easy language
- ✓ Cover 90% ETEA MCQS.
- ✓ Best diagrams
- ✓ Formulas. & tricks
- ✓ Points that are not in book but important for ETEA.
- ✓ Examples other than books.
- ✓ 1000+ ETEA past papers MCQs with solution
- ✓ 600+ MCQs for practice.
- ✓ Many more



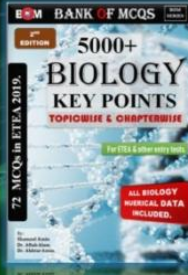
Main Features:

- ✓ ETEA PAST PAPERS solution 20015-2019
- ✓ Topic wise
- ✓ Chapter wise
- ✓ Physics : 1000+ MCQs
- ✓ Chemistry; 800+ MCQs
- ✓ Biology 700+ MCQs
- ✓ Maths; 700+ MCQs
- ✓ English : 400 MCQs
- ✓ A solution to each and every MCQs
- ✓ Year written with each mcqs
- ✓ For quick revision.
- ✓ Subject wise



MAIN FEATURES:

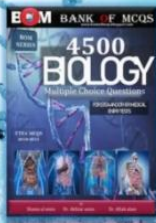
- ✓ 72+ MCQs in ETEA 2019 from this book.
- ✓ Topic wise and subject wise
- ✓ Clear diagrams
- ✓ Easy language
- ✓ To the points
- ✓ 5000 key points
- ✓ 700 numerical data
- ✓ Revise chapter in 10 min.
- ✓ Revise whole subject in single day.
- ✓ New tabular style, so you can learn it easily



Key Features:

- ~70+ MCQs in ETEA 2019.


1. Easy language
2. For class 11 and 12
3. 200+ MCQs per chapter
4. with key
5. To the point
6. Cover 80% ETEA from this book.
7. Chapterwise key points.



Key Features:


[TEST YOURSELF]

1. Easy language
2. For class 11 and 12
3. original papers
4. with key
5. yearwise



Key Features:

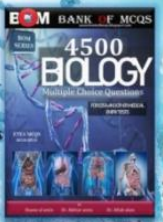
1. Easy language
2. For class 11 and 12
3. Revise chapter in 5 min.
4. Revise whole subject in single day.
5. To the point
6. Cover 80% ETEA from this book.
7. Golden MCQs of chemistry.
8. Chapterwise key points



Key Features:

- ~70+ MCQs in ETEA 2019.

1. Easy language
2. For class 11 and 12
3. 200+ MCQs per chapter
4. with key
5. To the point
6. Cover 80% ETEA from this book.
7. Chapterwise key points.





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ETEA engineering 2019

1. Pollutant which inhibit the synthesis of hemoglobin is
a) Hg b) Pb
c) Ni d) Ag
2. Which of the following alkyl halides shows higher reactivity?
a) R-F b) R-Cl
c) R-Br d) RI
3. For a reversible reaction, the catalyst increases the speed of
a) Forward reaction
b) Backward reaction
c) Both forward and backward reactions equally
d) Forward reaction to a larger extent than backward reaction
4. $2N_2O_5 \rightarrow 4NO_2 + O_2$ this reaction is an example of _____ order reaction
a) 1st b) 2nd
c) 3rd d) zero
5. Diamond and graphite are
a) Isomers b) isomorphs
c) allotropes d) both b and c
6. Metal sulfate that is comparatively more soluble in water is
a) $MgSO_4$ b) $CaSO_4$
c) $BaSO_4$ d) $SrSO_4$
7. CO_2 is a gas at room temperature but SiO_2 is solid., The reason is that
a) SiO is ionic
b) bonds in SiO_2 are very strong
c) SiO_2 is polymorphic
d) Si makes double bonds with O
8. Mr. Saad ____ his teeth before breakfast every morning
a) Will cleaned b) is cleaning
c) cleans d) clean
9. I plan to take my vacation ____ in June _____ July
a) Whether/or b) either/or
c) as it d) if as
10. _____ many times every winter in Skardu.
a) It snows b) it showed
c) it is snowing d) it is snow
11. $\int_1^2 (\sqrt{x} + \frac{1}{\sqrt{x}}) \sqrt{x} dx :$
a) 5/2 b) $2^{3/2} - 1$
c) 1/2 d) 2
12. A source of sound of frequency 500 Hz is moving towards an observer with velocity 30m/sec. the speed of sound is 330m/s. The frequency heard by the observer is
a) 550 Hz b) 458.3Hz
c) 530Hz d) 545 Hz
13. If the area of hysteresis loop of a material is large the hysteresis loss in this material will be
a) Zero b) small
c) large d) none of the above
14. In Young's slit experiment, the separation between the slits in halved and distance between the slits and screen is doubled the fringe width is
a) Unchanged b) halved



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c) double d) quadrupled

15. An object at the surface of the earth weighs 90N its weight at a distance 3R from the center of earth is
a) 8N b) 9N
c) 12N d) 10N

16. Capacitance of parallel plate capacitors independent of
a) Area of plates of capacitor
b) Medium between plates of capacitor
c) Potential difference between plates
d) Distance between plates of capacitor

17. The emf of a battery is equal to its terminal potential difference:
a) Under all condition
b) Only when the battery is being charged
c) When a large current is in the battery
d) Only when there is no current in the external circuit

18. A laser must be pumped to achieve
a) A metastable state
b) fast response
c) stimulated emission
d) population inversion

19. Your best friend in going on a near light speed trip. When at rest you measure her spaceship to be 100 feet long. Now she is in flight and you are on the earth, and you measure her spacecraft to be
a) Exactly 100 feet long
b) less than a 100 feet long

c) more than 100 feet long
d) none of the above

20. The maclaurin's expansion of coshx is:

21. If $f(x) = 16\sqrt{x}$ then $f''(4) =$
a) 1/4 b) -1/4
c) 1/16 d) -1/2

22. Maths

23. Maths

24. $\int \frac{1}{\cos^2 2x} dx =$
a) $\frac{1}{2} \csc 2x + c$
b) $\frac{1}{2} \ln[\sec 2x + \tan 2x] + c$
c) $\frac{1}{2} \tan 2x + c$
d) $\frac{1}{2} \ln[\cos(2x) - \cot(2x)] + c$

25. What happens to the half life of a radioactive substance as it decays?
a) It remains constant
b) it increases
c) it decreases
d) it could do any of these

26. The area of a book having length 1m and breadth 0.5m, in cm^3 is given by
a) 5000 b) 5
c) 500 d) 50

27. 2π rad/s is approximately equal to
a) 30 revolutions b) 40 revolution
c) 50 revolutions d) 60 revolutions

28. The equation of continuity can be derived from
a) Law of conservation of energy
b) Law of conservation of momentum
c) Law of conservation of mass
d) Law of conservation of charge



BANK OF MCQS

29. Lorentz force is based on
a) Dot product
b) cross product
c) both dot and cross product
d) independent of both
-
30. Which one of the following compounds produce the lowest amount of heat of combustion?
a) 1-butene b) Trans-2-butene
c) cis-2-butene d) Isobutylene
-
31. During SN^2 mechanism, the nucleophile attacks on the substrate;
a) When C-X bond has broken
b) Before C-X bond has broken
c) When C-H bond has broken
d) After the formation of carbocation
-
32. Carat is the unit of purity of gold. 18 carat gold contains _____ % gold
a) 50-60 b) 70-75
c) 90-95 d) 99
-
33. Which one of the following reagents is used to distinguish between primary, secondary and tertiary alcohols?
a) Baeyer's reagent b) Tollen's reagent
c) Lucas reagent d) Nessler's reagent
-
34. As the attraction between the nucleus and the foreign electron increases, the potential energy of the system
a) Increases
b) unaffected
c) decreases
d) first decrease then starts increase
-
35. The formation of but-2-ene always takes place through
a) SP^2 hybridization
b) SP^3 hybridization
c) SP^2 , SP^3 both
d) SP , SP^3 both
-
36. Pentane C_5H_{12} at room temperature does not obey
a) Charles's law
b) boyle's law
c) Avogadro's law
d) all of the above
-
37. 20 cm^3 CH_4 gas was burnt in 10 cm^3 O_2 to produce CO_2 as
 $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
The limiting reagent in this reaction is
a) O b) CH
c) CO_2 d) None of the above
-
38. Work hard _____ you should fail
a) Or b) lest
c) that d) none of the above
-
39. $\frac{\text{volt}}{\text{ampere}}$ farad, expected dimension is
a) $M^0 L^0 T^{-1} A^{-2}$ b) $M^1 L^1 T^{-2} A^{+2}$
c) $M^0 L^0 T^1 A^2$ d) None
-
40. In Compton scattering from stationary particles the maximum shift in wavelength can be made smaller by using
a) Higher frequency radiation
b) More massive particles
c) Lower frequency radiation
d) Less frequency radiation



BANK OF MCQS

41. Which of the following system below are not inertial reference frames?
a) A person standing still
b) An airplane in mid flight
c) A merry-go-round rotating at constant rate
d) All of the above are IFRs
42. A wire carrying current 10mA experiences a force of 2N in a uniform field. What is the force on it when current rises to 30mA?
a) 2N b) 4N
c) 6N d) 8N
43. Citizens are _____ stricter immigration laws.
a) Asking for b) recommending
c) demanding d) none of the above
44. Nadia doesn't like to drive, _____ she takes the bus everywhere
a) But b) yet
c) so d) if
45. NO₂ gas shows maximum absorption at about _____ nm
a) 400 b) 700
c) 200 d) 120
46. Color of the hair dye is mainly due to
a) Substituted alcohols
b) stearalkonium hectorite
c) meta substituted aniline
d) acetone
47. She insisted _____ helping me with the dishes
a) On b) with
c) for d) about
48. A large sum of money _____ stolen.
a) Were b) was
c) have d) had
49. Think not of it
[Choose the correct passive voice]
a) It should not be thought.
b) Let it not be thought of.
c) It must not be thought.
d) Let not be think of it-
50. Limit
51. For a function $f(x) = x^2 - 5x + 2$. Newton's-Raphson method fails for
a) $x_0 = 2/5$ b) $x_0 = -5/2$
c) $x_0 = 5/2$ d) $x_0 = -2/5$
52. $\frac{d}{dx} x^a = ?$
a) ax^{a-1} b) 0
c) $x^a \log_x a$ d) x^a
53. $\frac{d}{dx} \left(\frac{1}{x}\right) =$
a) x^2 b) $-x^2$
c) $\frac{1}{x^2}$ d) $-\frac{1}{x^2}$
54. The sign of the tangent to the curve $y = x^3 + 5$ at the point (1,2) is:
a) 6 b) 2
c) 5 d) 3
55. Which one of the following produces an NMR spectrum with more than one peak?
a) Ethane b) methane
c) butane d) cyclobutane
56. Which one of the following gases is the major contributor greenhouse effect?
a) Ozone b) CO₂
c) CH₄ d) NO₂
57. Oxidation number of Nickel in tetra carbonyl nickel Ni (CO)₄ is
a) +4 b) +3



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- c) 0 d)-2
-
- 58.** Addition of HCN to acetone forms cyanohydrin. It is an example of
a) Electrophilic addition reaction
b) Nucleophilic addition reaction
c) Electrophilic substitution reaction
d) Nucleophilic substitution reaction
-
- 59.** In ice there are H-Bonds and covalent bonds. What type of solid is it?
a) Ionic b) covalent
c) molecular d) metallic
-
- 60.** We are very excited _____ our trip to Karachi next week
a) At b) with
c) about d) over
-
- 61.** Choose the word opposite in meaning to "RETAIN"
a) Reject b) spare
c) renounce d) eject
-
- 62.** I am looking forward _____ having meeting with you next week
a) With b) at
c) to d) from
-
- 63.** Maths
-
- 64.** A homogenous equation of degree two has parallel lines only, when :
-
- 65.** Choose the correct sentence
a) She is busy at the work and won't be home before 10:30
b) She is busy at work and would not be home before 10:30
c) She is busy at work and won't be home before 10:30
d) She is busy in work and would not be home before 10:30
-
- 66.** Choose the word nearest in meaning to "DEplete"
a) Destroy b) finish
-
- c) exhaust d) vanish
-
- 67.** The order of equation $(2x-y+3)dx + (y-2x-2)dy=0$
a)0 b)1
c)2 d)3
-
- 68.** Which one of the following function are homogenous?
a) $x \sin y + y \sin x$
b) $x e^{y/x} + y e^{x/y}$
c) $x^2 - x^2 y$
d) $\arcsin xy$
-
- 69.** Find f_0 of $f(x,y) = \sin^{-1} xy$ is
a) $\frac{x}{\sqrt{1-x^2y^2}}$ b) $\frac{x}{\sqrt{1-x-y^3}}$
c) $\frac{-y}{\sqrt{1-x^2y^2}}$ d) $\frac{-y}{1-x^2y^2}$
-
- 70.** For non linear function $f(x) = 0$, Newton- Raphson method is
a) b) c) d)
-
- 71.** The accuracy of the approximation can be improved when approximating strip has:
a)parabolic arc
b) squares
c) tripozoids
d)rectangles
-
- 72.** A vector can be multiplied by a number, the number may be
a) Dimensionless
b) dimension scalar
c) negative
d) all a, b and c are correct
-
- 73.** Equations having a common solution are called.
a) Linear equations
b) homogeneous equations
c) simultaneous equations
d) none of the above
-
- 74.** Which one of the following liquids



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is more volatile?

- a) Chloroform b) ethanol
c) water d) Glycerin

75. If the equilibrium constant K_c value for a certain reaction is very small, then

- a) Reactants are in large amount
b) Products are in appreciable amounts
c) Reactants and products both are in appreciable amounts
d) In such a situation equilibrium cannot be obtained.

76. Which one of the following form acidic solution when dissolved in water?

- a) Na_2CO_3 b) CH_3COONa
c) NH_4Cl d) K_2CO_3

77. Zinc and copper electrodes are connected for galvanic cell and salt bridge is also immersed in both the half-cell, the salt bridge will give cation to

- a) Copper half cell
b) zinc half cell
c) both a and
d) None of the above

78. When $\text{K}_4[\text{Fe}_9\text{CN}_6]$ is dissolved in water. It will furnish _____ ions per molecule.

- a) 10 b) 2
c) 6 d) 5

79. Choose the alkyne that on catalytic hydrolysis form an aldehyde

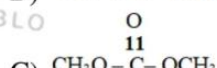
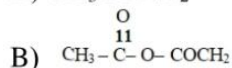
- a) $\text{CH}_3\text{-C}\equiv\text{CH}$



- c) $\text{CH}_3\text{-C}\equiv\text{C-CH}_3$
d) None of the above

80. The compound which you can say ester is

- A) CH_3CONH_2



- D) $\text{CH}_3\text{OCOCH}_3$

81. The efficiency of electric heater is

- a) 45% b) 60%
c) 75% d) 100%

82. The velocity of disc at the bottom of an inclined plane is independent of

- a) Mass of disc
b) radius of disc
c) height of inclined plane
d) both a and b

83. Water flows through a 1cm diameter pipe with speed of 1m/s. what should be the diameter of the nozzle if the water is to emerge at 4m/s?

- a) 2.1cm b) 1.6cm
c) 1cm d) 0.5cm

84. The ratio of P.E and total energy at extreme position in SHM will be equal to

- a) 1 b) $\frac{1}{2}$
c) $\frac{1}{4}$ d) zero

85. The speed of sound in air is 334m/s at a pressure P. what will be the speed of sound if the pressure becomes 4P?

- a) 167m/s b) 334m/s
c) 668m/s d) 1336 m/s

86. In monochromatic red light a blue book will probably appear to be

- a) Purple b) green
c) black d) none of the above



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87. Two identical heat engines "A" and "B" have their sources at 600k and 400k and their sinks at 300k and 250k respectively. What can you say about their efficiency?
a) A is more than B
b) A is less than B
c) both have equal efficiency
d) the data given is not sufficient
88. Which one is not endothermic process?
a) Atomization of I₂
b) electrolysis of water
c) condensation of vapors
d) both b and c
89. One mole of which of the following bucky ball will have more molecules?
a) C₂₀ b) C₅₀
c) C₆₀ d) all same
90. The possible peaks (chemical shifts values) for 1 chloro-2-propanol molecules are
a) 2 b) 3
c) 4 d) 7
91. For a balanced wheat stone bridge, the current through the galvanometer is
a) Maximum b) minimum
c) zero d) I μA
92. Two parallel conducting wires placed closer to each other carry current in the opposite direction will
a) Attract each other
b) repel each other
c) no effect
d) None of the above
93. If we increase the resistance of coil, the induced emf will
a) Increase b) decrease
c) remains same d) none
94. In a capacitive circuit, current and voltage phase relation is
a) In phase
b) current leads voltage by 90°
c) voltage leads current by 90°
d) None of the above
95. The ability of solids to resist bending is called
a) Strength b) hardness
c) toughness d) stiffness
96. Which one is known as antimatter or antiparticle?
a) Proton b) electron
c) neutron d) positron
97. Laser light is the result of
a) Ordinary emission
b) spontaneous emission
c) stimulated emission
d) all of the above
98. Radioactivity is affected by
a) Temperature b) pressure
c) humidity level d) None of the above
99. A car in motion hits and gets embedded in a tree trunk. What is conserved?
a) Momentum and K.E
b) Kinetic energy alone
c) neither K.E nor momentum
d) Momentum alone
100. A metallic carbide on treatment with water gives out a colorless gas, which burns in air readily and gives a red precipitate with CuCl₂ and NH₄OH Identify the gas.
a) CH₄ b) C₂H₂
c) C₂H₄ d) C₂H₆



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- 101** Transpose of a rectangular matrix is a:
a) rectangular matrix
b) diagonal matrix
c) square matrix
d) scalar matrix
- 102** When a selection of objects is made without paying regard to order of selection, it is called the:
a) permutation b) combination
c) series d) sequence
- 103** Two factorization of $x^2 + x$ is;
a) $(z+\sqrt{6})(x-\sqrt{6})$
b) $(z+6)^2$
c) $(z+\sqrt{6}t)(x+\sqrt{6}t)$
d) $(z+\sqrt{6}t)(x-\sqrt{6}t)$
- 104** The work done by a magnetic field on a moving charge is
a) $BqvL$ b) Bqv/L
c) zero d) positive
- 105** Four wires meet at a junction. The first carries 4A into junction, the second carries 5A out of the junction and 3rd carries 2A out of the junction. The 4th carries
a) 7A out of the junction
b) 7A into the junction
c) 3A out of the junction
d) 3A into the junction
- 106** A 10 turn conducting loop spins at 60 revolutions per second in a magnetic field of 0.50T, the maximum emf generated is
a) $200 \pi^2 r^2$ b) $300 \pi^2 r^2$
c) $400 \pi^2 r^2$ d) $600 \pi^2 r^2$
- 107** According to the theory of relativity
a) Moving clock runs fast
b) Energy is not conserved in high speed collision
c) The speed of light must be measured relative to the ether
d) None of the above are true
- 108** Which one of the following has the greatest effect in decrease the oscillation frequency of an LC circuit using instead?
a) $\frac{L}{2}$ and $\frac{C}{2}$ b) $\frac{L}{2}$ and $2C$
c) $2L$ and $\frac{C}{2}$ d) $2L$ and $2C$
- 109** The relation between the disintegration constant λ and the half life T of a radioactive substance is
a) $\lambda = 1/T$ b) $\lambda = 2/T$
c) $\lambda T = \ln 2$ d) $\lambda T = \ln(1/2)$
- 110** if slope of a line is 2 then slope of the line perpendicular to this line is equal to
a) -2 b) $-1/2$
c) 2 d) 0
- 111** A line x= B touch a circle $x^2 + y^2 - 6x - 4y - 12 = 0$ at:
a) (2,8) b) (8,-2)
c) (8,2) d) (-2,8)
- 112** The line $y = mx + c$ intersects the circle $x^2 + y^2 = a^2$ at the most of ___ points
a) 1 b) 2
c) 3 d) 4
- 113** The equation $(x+4)^2 + (y-1)^2 = b$ represents a circle with radius
a) $\sqrt{6}$ b) 6
c) 0 d) 1
- 114** A line $y = -x - c$, will touch a parabola $x^2 - \beta y$ only when
a) $1/2$ b) -2



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- c)2 d)-1/2
-
- 115** The focus of the parabola $y^2 = -B(x-3)$ is ?
a)(0,1) b)(1,0)
c)(0,1) d)(1,1)
-
- 116** A differential equation is considered to be ordinary if it has;
a)more dependent variable
b) more than one dependent variable
c)one independent variable
d) more than one independent variable
-
- 117** The differential equation $2\frac{dy}{dx} + x^2y = x+2$
a)linear
b) non linear
c)linear with fixed points
d) undeterminable to be linear or non linear
-
- 118** The dimensions of angular momentum are
a) MLT^2 b) ML^2T^{-2}
c) ML^2T^{-1} d) ML^3T^{-1}
-
- 119** Which one of the following statements is incorrect for vectors?
a) $|\vec{AB}| = |\vec{BA}|$ b) $|\vec{AB}| = |\vec{AB}|$
c) $\vec{AB} = -\vec{AB}$
d) \vec{AB} north = \vec{AB} south
-
- 120** Acetamide on hydrolysis gives
a) Acetaldehyde b) acetic acid
c) ethyl amine d) ethanol
-
- 121** Which one of the following does not have carboxylic acid group?
a) Benzoic acid b) ethanoic acid
c) picric acid d) adipic acid
-
- acid
-
- 122** He is quite deaf ____ my requests
a) With b) about
c) to d) of
-
- 123** He said to me, how long will you stay here?"
[Choose the correct indirect speech
a) He said to me how long I would stay here
b) He asked me how long I will stay here
c) He asked me how long I would stay there.
d) He inquired for how long I will stay there.
-
- 124** The leader, as well as his brothers, ____ to the same tribe
a) Belonging b) belongs
c) belong d) belonged
-
- 125** The reciprocal of the number 'i' is
a)1 b)-1
c) i d)- i
-
- 126** $a^2 + b^2 =$
a) $(a+b)(a-b)$ b) $(a + ib)(a - ib)$
c) $(a+b)(a-ib)$ d) $(a+ b^2)(a-b)$
-
- 127** If A is a symmetric matrix, then A^t is
a)A b)|A|
c)0 d)Diagnol matrix
-
- 128** If A is a matrix of order mxn and B is matrix of order n x p then order of BA is:
a)p x m b)p x n
c)n x p d) m x p
-
- 129** On chlorination, benzene forms single monochlorobenzene without any isomer. It proves that



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- a) Benzene is aromatic
- b) All C-C in benzene are identical
- c) All C-H bonds in benzene are identical
- d) Benzene sometimes behaves as non-aromatic

130 Avogadro's constant in the number of

- a) Atoms in 1g of He
- b) molecules in 35.5g of chlorine
- c) electrons present in 2g H
- d) atoms in 24g of Mg

131 A given sample of AlCl_3 contains 6.02×10^{20} Al^{3+} ions. The molecules of Cl^- will be

- a) 1×10^3
- b) 3×10^3
- c) 3×10^4
- d) 0.33×10^3

132 The angular momentum of the hydrogen atom in ground state is equal to

- a) $h/2\pi$
- b) $2h/2\pi$
- c) $\pi/2h$
- d) $2\pi/h$

133 which electronic level will allow the hydrogen atom to absorb a photon but not emit?

- a) 1s
- b) 2s2p3d
- c) 2p3d
- d) 3d

134 Which statement about the following molecules is incorrect?

- a) NH_3 has pyramidal shape
- b) CO_2 is linear
- c) H_2O is angular
- d) H_2S is linear

135 The molecule having zero dipole moment among the following

- a) NH_3
- b) SnCl_2
- c) PH_3
- d) CCl_4

136 For a gas when volume and pressure are 1 dm^3 and 2 atm respectively.

What will be its new volume if the pressure is increased to 6 atm at constant temperature?

- a) $\frac{1}{2} \text{ dm}^3$
- b) $\frac{1}{3} \text{ dm}^3$
- c) $\frac{1}{4} \text{ dm}^3$
- d) $\frac{2}{3} \text{ dm}^3$

137 Vapor pressure of a liquid does not depend on

- a) Temperature
- b) intermolecular forces
- c) amount of liquid
- d) amount of solid dissolved in liquid

138 instead of beating _____ the brush, straightaway come to the point

- a) Away
- b) out
- c) about
- d) on

139 A small block oscillates back and forth on a smooth concave surface of radius R. the time period of small oscillation is

- a) $T = 2\pi \sqrt{\frac{R}{g}}$
- b) $T = 2\pi \sqrt{\frac{2R}{g}}$

- c) $T = 2\pi \sqrt{\frac{R}{2g}}$
- d) None of the above

140 The process or systems that do not involve exchange of heat are called

- a) Isothermal process
- b) equilibrium process
- c) thermal process
- d) adiabatic process

141 When NH_4Cl is added to a solution of $(\text{NH}_4)_2\text{CO}_3$, there will be?

- a) Decrease in (NH_4^+) ions concentration
- b) Decrease in CO_3^{2-} ions
- c) No change in CO_3^{2-} concentration
- d) No change in concentration of any specie



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- 142** The strongest base among the following is
a) Cl^- b) Br^-
c) I^- d) CH_3COO^-
-
- 143** During the discharge of lead acid battery
a) Pb is dissolved at the cathode
b) Pb is deposited at the cathode
c) PbSO_4 is formed at both anode and cathode
d) Concentration of H_2SO_4 increases
-
- 144** Acidic KMnO_4 can't be used for the estimation of
a) Ferrous ions b) oxalic acid
c) Potassium iodide d) Ferric ions
-
- 145** A compound X is orange red in color, when KOH is added to it, lemon yellow coloration is obtained, compound X is
a) $\text{K}_2\text{Cr}_2\text{O}_7$ b) K_2CrO_4
c) KMnO_4 d) PbS
-
- 146** Ozonolysis of 2-Methyl-2-butene yields
a) Only aldehyde
b) only ketone
c) both aldehyde and ketone
d) aldehyde and alcohol
-
- 147** Alkyl halides are reactive towards nucleophilic attack because
a) They are ionic in nature
b) The C-X bond is non-polar
c) They have nucleophilic carbon and bad leaving group
d) They have electrophilic carbon and good leaving group
-
- 148** Methyl alcohol on oxidation with acidified $\text{K}_2\text{Cr}_2\text{O}_7$, gives
a) CH_3COCH_3 b) CH_3CHO
c) HCOOH d) CH_3COOH
-
- 149** The scalar triple product of $\vec{i}, \vec{j}, \vec{k}$ and $\vec{k} - \vec{i}$ is?
a) 1 b) 0
c) -1 d) 3
-
- 150** For three vectors a,b,c, $d(\vec{b} + \vec{c}) = \vec{b}(\vec{d} + \vec{c})$, then ?
a) $a(\vec{b} + \vec{c}) = 0$ b) $c(\vec{a} + \vec{b}) = 0$
c) $b(\vec{a} + \vec{c}) = 0$ d) $c(\vec{a} + \vec{b}) = 0$
-
- 151** For non-collinear vector A and B, the correct result is
a) $p\vec{A} + q\vec{B} = 0, p \neq 0, q \neq 0$
b) $p\vec{A} + q\vec{B} = 0, p = 0, q = 0$
c) $p\vec{A} + q\vec{B} \neq 0, p = 0, q = 0$
d) $p\vec{A} + q\vec{B} \neq 0, p \neq 0, q \neq 0$
-
- 152** Arithmetic mean between $2 + \sqrt{2}$ and $2 - \sqrt{2}$ is:
a) 2 b) $\sqrt{2}$
c) 0 d) 4
-
- 153** A function whose domain is the set of natural numbers is called
a) identity function
b) series
c) sequence
d) onto function
-
- 154** If sum of five arithmetic mean b/w a and b is 50, then their arithmetic mean is;
a) 25 b) 50
c) 10 d) 20
-
- 155** The dimension of pressure is
a) $\text{ML}^{-1} \text{T}^{-2}$ b) $\text{ML}^{-2} \text{T}^{-2}$
c) $[\text{MLT}^{-2}]$ d) $\text{ML}^{-1} \text{T}^{-1}$
-
- 156** The magnitude of two forces each of them is ION are added together such that the magnitude of their resultants



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is also ION. then the angle between the forces is

- a) 30° b) 60°
c) 90° d) 120°

157 Two railway trucks of masses m and $5m$ move towards each other in opposite direction with speed $3v$ and v respectively. These trucks collide and stuck together. What is the speed of the truck after collision?

- a) $v/3$ b) $v/2$
c) v d) $5v/4$

158 passengers _____ to smoke in the train

- a) Was not allowed b) had not allowed
c) will not allow d) are not allowed

159 Can you _____ a few lines from wordsworth to prove that he is a poet of nature?

- a) Side b) site
c) site d) cite

160 $\frac{\cos x \sec x}{\cos x} =$ _____

- a) $\tan x$ b) _____
c) _____ d) _____

161 $\frac{\cos \theta - \tan \theta}{\sin \theta \sin \theta} =$ _____

- a) $\tan \left(\frac{\theta - \varphi}{2} \right)$ b) $\tan (\theta - \varphi)$
c) $\tan \left(\frac{\theta - \varphi}{2} \right)$ d) $-\tan (\theta - \varphi)$

162 The expression $\tan (3\theta) =$ _____?

- a) $\frac{1 \tan \theta - \tan^3 \theta}{1 - \tan^3 \theta}$
b) $\frac{3 \tan \theta - \tan^3 \theta}{1 + 3 \tan^3 \theta}$
c) $\frac{3 \tan \theta - \tan^3 \theta}{1 - 3 \tan^3 \theta}$
d) $\frac{1 \tan \theta + \tan^3 \theta}{1 - 3 \tan^3 \theta}$

163 Law of cosine states that :

- a) $a^2 = b^2 + c^2 - 2bc \cos \gamma$
b) $b^2 = a^2 + c^2 + 2bc \cos \beta$
c) $c^2 = a^2 + b^2 - 2bc \cos \gamma$
d) $a^2 = b^2 + c^2 - 2bc \cos \alpha$

164 Numerical integration for single function is also called

- a) area b) volume
c) numerical quadrature d) both A and C

165 Domain of $\sec[x]$ is ;

- a) $[-1, 1]$
b) \mathbb{R}
c) $\mathbb{R} \rightarrow [x]x = (2n+1)\pi/2, n \in \mathbb{Z}$
d) $\mathbb{R} \rightarrow [x]x = n\pi, n \in \mathbb{Z}$

166 Principle value of $\cos^{-1}[\cos(5)]?$

- a) 5 b) $\pi - 5$
c) $5 - \pi$ d) $2\pi - 5$

167 The relation $\sec [\arcsin x] = ?$

- a) $\sqrt{x^2 - 1}$ b) $\frac{1}{\sqrt{1+x^2}}$
c) $\sqrt{x^2 + 1}$ d) $\frac{1}{\sqrt{1-x^2}}$

168 $\int x^2 dx =$

- a) $x^2 + c$ b) $\pi^2 + c$
c) $\frac{x^{x+3}}{x+3} + c$ d) $\pi x^{x-1} + c$

169 An emf of 16 volts is induced in a coil of inductance 4 H The rate of change of current must be

- a) 64 A/s b) 32A/s
c) 16 A/s d) 4 A/s

170 In an RLC series phasor, we start drawing the phasor from which quantity?

- a) Voltage b) resistance
c) impedance d) current

171 What is the average value of sinusoidal voltage that has a peak



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value of 15 volts?

- a) 0V
- b) 9.56V
- c) 10.6V
- d) 19.1V

172 Which of the following has the largest kinetic energy?

- a) 2M and 3V
- b) 5M and 2V
- c) 3M and 4V
- d) M and V

173 The SI unit of electric charge is

- a) AS^{-1}
- b) VS^{-1}
- c) A
- d) S

174 Aldehydes are reducing agents, in the reaction with Fehling's solution they reduce

- a) Cu^{+2} ions
- b) Ag^{+} ions
- c) NaOH
- d) Na

175 In ice the water molecules are bounded by

- a) ionic bonds
- b) hydrogen bonds
- c) covalent bonds
- d) metallic bonds

176 The property of crystalline solid necessary to maintain habit of crystal is called

- a) Crystal lattice
- b) lattice site
- c) geometrical shape
- d) Polymorphism

177 The dispersion phase and dispersion medium for soap lather is respectively

- a) Gas and solid
- b) gas and liquid
- c) liquid and liquid
- d) solid and liquid

178 Which one is not correct for the stability of colloidal solution?

- a) Greater charge density on colloid
- b) Less salivation energy
- c) More Brownian motion

d) None of the above

179 The n^{th} term of arithmetic geometric mean is

- a) $[a+(n-1d)]r^n$
- b) $[a+(n-1d)]r^{n-1}$
- c) $[a+(n-1d)]r$
- d) $[a+nd]r^{n-1}$

180 ${}^5C_2 + {}^5C_3 =$

- a) 5C_3
- b) 4C_1
- c) 5C_2
- d) 4C_1

181 For independent events A and B, $P(A \cap B) = ?$

- a) $P(A), P(B/A)$
- b) $P(A) \cup P(B)$
- c) $P(A), P(B)$
- d) $P(A) \cap P(B)$

182 For a random experiment, all possible outcome are

- a) numerical space
- b) sample space
- c) event space
- d) both b and c

183 If x is so small that square and higher powers can be neglected then $(1+3x)^{-2} =$

- a) $1+9x$
- b) $1-9x$
- c) $1+6x$
- d) $1-6x$

184 The last term of the expansion are $(3x+3y)^{-2}$ is

- a) $7y^7$
- b) $3^7 y^7$
- c) $21y^7$
- d) y^7

185 Which one of the following equations is not a function of y with respect to x/

- a) $2x+3y = 6$
- b) $x^2 - y = 6x-5$
- c) $x^2 + y^2 = 16$
- d) $y = 4x^3 - 5x^3 + 3x - 7$



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- 186** The inverse function for the following functions $f(x) = \frac{x}{x+1}$ is:
a) $f^{-1}(x) = \frac{x}{x+1}$ b) $f^{-3}(x) = xy+x$
c) $f^{-3}(x) = -x-1$ d) $f^{-1}(x) = -\frac{x}{x+1}$
-
- 187** There may be _____ feasible solution of the feasible region.
a) infinite b) limited
c) finite d) defined
-
- 188** In linear programming, objective function and objective constants are
a) solved b) linear
c) quadric d) adjacent
-
- 189** If two charges experience a force of 10N when medium is air. If medium is change whose relative permittivity is 2 then force will be
a) 3N b) 5N
c) 10N d) 0.2N
-
- 190** The time rate of change of linear momentum is
a) Force b) tension
c) inertia d) impulse
-
- 191** A body moving in a circle of radius 1m transverses an angle of 57.3%. The distance covered by the body along circle is
a) 1 m b) 57.3m
c) πm d) $\pi/2m$.
-
- 192** The restoring force in the simple pendulum of mass m is
a) $mg \cos\theta$ b) $mg \sin\theta$
c) $mg \tan\theta$ d) mg
-
- 193** if temperature of medium increases by 1C then speed of sound will rise
a) 0.61cm/s b) 6.1cm/s
c) 61cm/s d) 61m/s
-
- 194** Fringe spacing is a function of (young's double slit Exp)
a) Separation between slits
b) Wavelength of light
c) Distance between slits and screen
d) All of the above
-
- 195** Which one of the following properties is common between sound and light?
a) Nature of sound and light
b) Polarization
c) medium
d) diffraction
-
- 196** In isothermal process the internal energy of the system
a) Remains constant
b) increases
c) decreases
d) none of the above
-
- 197** 197. An isolated charged point particle produced an electric field with magnitude E at point 2m away a point m from the particle the magnitude of the field is
a) 2E b) 4E
c) E/2 d) E
-
- 198** Which one of the following has highest melting point?
a) NaCl b) $MgCl_2$
c) $AlCl_3$ d) $SiCl_4$
-
- 199** The main product obtained when acetic acid reacts with PCl_5 ?
a) CH_3COCl b) CCl_3CHO
c) CH_3Cl d) CH_3OH
-
- 200** Hydrolysis of an ester in the presence of alkali is called
a) Esterification b)



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Transesterification
c) saponification d)
Decarboxylation

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1. B	31. B	61. D	91. C	121. C
2. D	32. B	62. C	92. B	122. C
3. C	33. C	63.	93. B	123. C
4. A	34. C	64.	94. B	124. B
5. C	35. A	65. C	95. D	125.
6. A	36. D	66. C	96. D	126.
7. C	37. D	67.	97. C	127.
8. C	38. B	68.	98. D	128.
9. B	39. D	69.	99. B	129. B
10. A	40. A	70.	100. B	130. D
11.	41. D	71.	101.	131.
12. A	42. C	72. D	102.	132. A
13. C	43. C	73.	103.	133. A
14. D	44. C	74. A	104. C	134. D
15. D	45. A	75. A	105. D	135. D
16. C	46. C	76. C	106. D	136. B
17. D	47. A	77. B	107. D	137. C
18. D	48. B	78. D	108. D	138. C
19. B	49. B	79. D	109. C	139. A
20.	50.	80. D	110.	140. D
21.	51.	81. D	111.	141. B
22.	52.	82. D	112.	142. D
23.	53.	83. D	113.	143. C
24.	54.	84. A	114.	144. D
25. A	55. C	85. B	115.	145. B
26. A	56. B	86. C	116.	146. C
27. D	57. C	87. A	117.	147. D
28. C	58. B	88. C	118. C	148. C
29. B	59. B	89. D	119. C	149.
30. D	60. C	90. C	120. B	150.

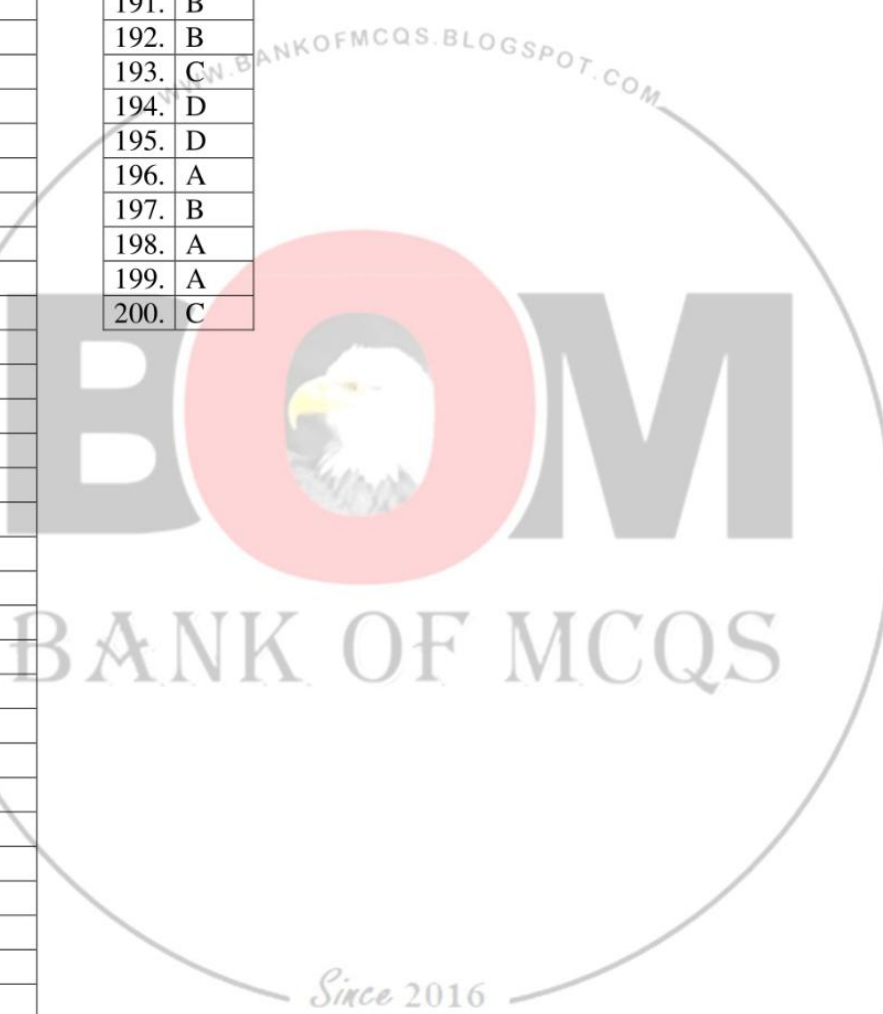
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151.	
152.	
153.	
154.	
155.	A
156.	D
157.	A
158.	D
159.	D
160.	
161.	
162.	
163.	
164.	
165.	
166.	
167.	
168.	C
169.	D
170.	C
171.	B
172.	C
173.	A
174.	A
175.	B
176.	C
177.	B
178.	B
179.	
180.	
181.	
182.	
183.	
184.	
185.	
186.	
187.	

188.	
189.	B
190.	A
191.	B
192.	B
193.	C
194.	D
195.	D
196.	A
197.	B
198.	A
199.	A
200.	C



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- Examples other than books.
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By:
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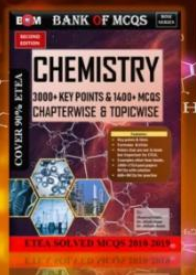

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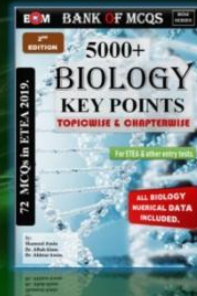
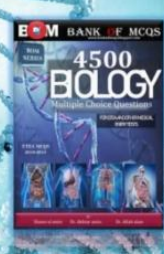
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- ✓ Clear diagrams
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Key Features:

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2. For class 11 and 12
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Key Features:

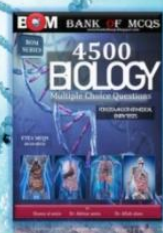
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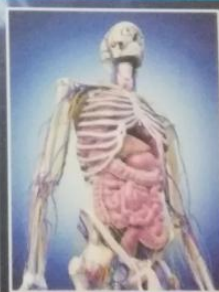
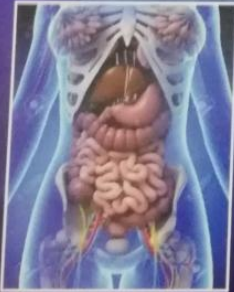
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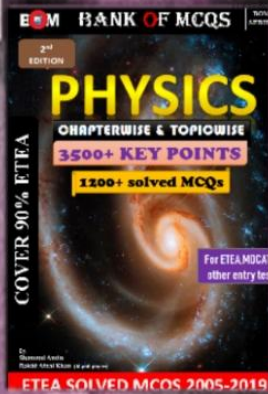
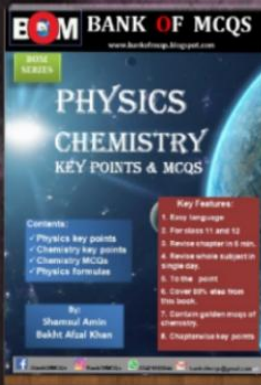
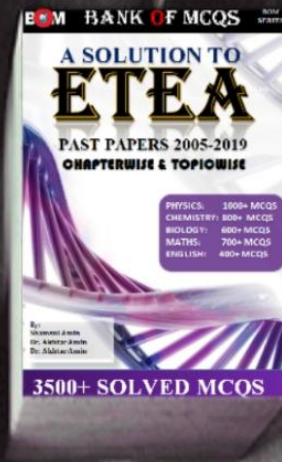
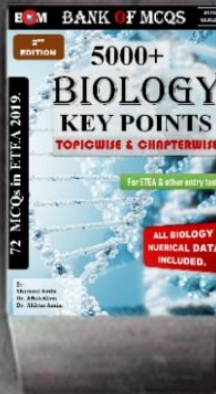
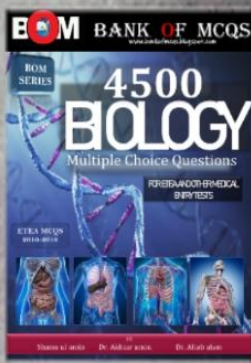
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KEY POINTS & MCQS

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- ✓ Chemistry key points
- ✓ Chemistry MCQs
- ✓ Physics formulas

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8. Chapterwise key points



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- Reactants in a transition state:
(a) Always change to product
(b) Return back to reactants
(c) May return to reactants or proceeds to form products
(d) Are of low energy
- Out of the following indicate the stitching items for PUPPIES.
(a) School (b) Litter
(c) Covey (d) Group
- Tornaria larva reservation with:
(a) Bipinnaria larva (b) Trochopore larva (c) Glochidium larva (d) Instar larva
- Taxus baccata* is the botanical nature of:
(a) Fever tree (b) Deadly nightshade (c) English Yew (d) Daffodils
- Venous flower basket belong to which group of organisms:
(a) Angiosperms (b) Sponges
(c) Marine Algae (d) Fungus like protests
- On a planet, a vertically launched projectile takes 12.5 a to return to its starting position. The projectile gains a maximum height of 170m. The planet does not have an atmosphere. What is the acceleration of free fail on this planet?
(a) 2.2 m.s^{-2} (b) 8.7 m.s^{-2}
(c) 27 m.s^{-2} (d) 54 m.s^{-2}
- The lionization potential of a hydrogen atom is 13.6v what will be the acceleration of free fall on this orbit?
(a) -10.2 Ev (b) -3.40 Ev
(c) +3.40 eV (d) -1.51 eV
- A man has a mass of 80kg. He ties himself to one end of rope which passes over a single fixed pulley. He pulls on the other end of the rope to lift himself up at an average speed of 50 cms^{-1} . What is the average useful power at which he is working?
(a) 40W (b) 0.39 kW
(c) 4.0 kW (d) 39 kW
- Compound in which addition takes plats through markovnikov's rule is:
(a) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
(b) $\text{CH}_3 - \text{C}(\text{CH}_3) = \text{CH} - \text{CH}_3$
(c) $\text{C}_2\text{H}_4 \text{ CH} = \text{CH} - \text{CH}_3$
(d) $\text{CH}_3 - \text{CH} = \text{CH} - \text{C}_2\text{H}_4$
- Which of the following will a testes shield against x-rays?
(a) Ordinary water (b) Heavy water
(c) Lead (d) Aluminum
- In a uniform electric field, which statement is correct?
(a) All charged particles experience the same force
(b) All charged particles move with the same velocity.
(c) All electric field lines are directed towards positive charges
(d) All electric field lines are parallels.
- During the formation of aqueous solution of any electrolyte:
(a) Heat is evolved
(b) Heat is absorbed
(c) Heat may evolved or absorbed
(d) Electrolyte do not dissolve in water
- The compound with more than 10% solubility in pure water is:



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- (a) MgCO_3 (b) $\text{Al}_2(\text{CO}_3)_3$
(c) K_2CO_3 (d) ZnCO_3
14. The mass of NaOH needed to prepare 0.2 molar solution in 500g pure water at 4°C is:
(a) 0.4g (b) 4.0g
(c) 1.5g (d) 1.0g
15. Choose the related word for Rot on the analogy of elephant: Stride.
(a) Scamper (b) Loiter
(c) Whimper (d) Gallop
16. Baroreceptors are the sensors in body responsible for determination of:
(a) Blood Glucose (b) Blood Ammonia
(c) Blood pH (d) Blood flow
17. Which one of the following is not a draught animal?
(a) Buffalo (b) Mule
(c) Elephant (d) Yak
18. Which of the following is not isotonic to sea water?
(a) Myxine (b) Skates
(c) Sharks (d) Teleost
19. Which one of the following is not an insect?
(a) Ticks (b) Honey bee
(c) Beetle (d) Wasp
20. A condition called Goose pimples, are caused by;
(a) Overcooled body (b) Bacteria
(c) Environmental changes (d) Pollution
21. Two wave sources are oscillating in phase. Each source produces a wave of wavelength λ . The two waves from the sources meet at point x with a phase difference of 90° . What is a possible difference in the distances from the two wave sources to point x ?
- (a) $\lambda/8$ (b) $\lambda/4$
(c) λ (d) 2λ
22. The activity of a certain nuclide is governed by the relation $\frac{\Delta N}{\Delta t} = -\lambda N$ where $\lambda = 2.4 \times 10^{-8} \text{ s}^{-1}$ what is the half-life of the nuclide?
(a) $2.9 \times 10^7 \text{ s}$ (b) $1.3 \times 10^7 \text{ s}$
(c) $1.2 \times 10^{-8} \text{ s}$ (d) $3.4 \times 10^{-8} \text{ s}$
23. Four resistors are connected in a square as shown
-
- The resistance may be measured between any two junctions. Between which two junctions is the measured resistance greatest?
(a) P and Q (b) Q and S
(c) R and S (d) S and P
24. The elevation in boiling point ΔT_b is equal to ebullioscopy constant K_b when the Molarity (M) of the solution is:
(a) 0.1m (b) 1.0m
(c) 10.0m (d) Statement is wrong
25. $\text{ON}^- + \text{C}_2\text{H}_5 - \text{I} \rightarrow \text{C}_2\text{H}_5 - \text{OH} + \text{I}^-$
One of the species in the above reaction is a substrate. It is
(a) OH^- (b) $\text{CH}_2 - \text{CH}_2 - \text{OH}$
(c) I^- (d) $\text{CH}_3 - \text{CH}_2 - \text{I}$
26. The process that can both be endothermic and exothermic out of the following is:



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- (a) Formation (b) Crystallization (c) Bond breaking (d) condensation
27. The amine which is more reactive towards ill is:
(a) Diethyl methyl amine (b) dimethyl amine (c) Methyl propyl amine (d) Butyl amine
28. He said, "What is the matter"? [Choose the correct indirect speech:]
(a) He said what the matter was (b) He asked what the matter was (c) He enquired that what was the matter (d) He asked that what the matter had been
29. The number of Hyoid bone in human skull region is:
(a) 1 (b) 6 (c) 22 (d) 206
30. Which factor is not involved in release of Oxytocin in females:
(a) Stretching of uterus (b) Stretching of Cervix (c) Low level of testosterone (d) Low level of progesterone
31. Chymotrypsin acts upon:
(a) Starch in duodenum (b) Proteins in stomach (c) Proteins in duodenum in acidic medium (d) Proteins in duodenum in alkaline medium
32. Which of the following series lie in the visible region?
(a) Lyman (b) Paschen (c) Balmer (d) Pfund
33. Two springs of spring constant K_1 and K_2 are arranged in parallel and a body of mass m is attached to it then calculate the time period of the system:
(a) $2\pi \sqrt{\frac{m}{K_1+K_2}}$ (b) $2\pi \sqrt{\frac{2m}{K_1+K_2}}$ (c) $2\pi \sqrt{\frac{m \times K_2}{K_1+K_2}}$ (d) $2\pi \sqrt{\frac{K_1+K_2}{m}}$
34. To determine the resistance of a voltmeter by discharging a capacitor through it, the instantaneous voltage is then given by the relation:
(a) $V_0 e^{-t/RC}$ (b) $V_0 e^{t/AC}$ (c) $V_0/2$ (d) $V_0/\sqrt{2}$
35. When we are measuring the internal resistance of a cell by potentiometer, the cmf of the battery must be greater than the:
(a) emf of the cell (b) P.D in the circuit (c) Current in the cell (d) Current in the circuit
36. Upon hydrolysis compound "x" in the presence of NaOH we get C_2H_2OH . And $CH_3-C(=O)-O^-Na^+$. Compound "X" is:
(a) $C_2H_3-CH_2-OH$ (b) $CH_3-C(=O)-OH$ (c) $CH_3-C(=O)-O-C_2H_3$ (d) $C_2H_3-C(=O)-O-CH_3$
37. The compound which you think is not the derivative of acetic acid is:
(a) $CH_3-C(=O)-Cl$ (b) $CH_3-C(=O)-CO-O-CH_3$ (c) $CH_3-C(=O)-NH_2$ (d) None of the above
38. The reducing agent in the reaction given, $KMnO_4 + KI + H_2SO_4 \rightarrow$



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$\text{MnSO}_4 + \text{K}_2\text{SO}_4 + \text{I}_2 + \text{H}_2\text{O}$ is:

- (a) KMnO_4 (b) KI
(c) H_2SO_4 (d) KI and H_2SO_4
both

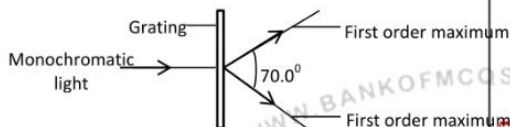
39. Don't poke your nose ___ my affairs.
(a) in (b) on
(c) into (d) by
40. A vein differs from an artery in having:
(a) Strong muscular walls
(b) Narrow lumen
(c) Valves control direction of blood flow opposite to heart
(d) Valves control direction of blood flow towards heart
41. Expiratory centre in medulla is:
(a) Dorsal (b) Ventral
(c) Lower part (d) All of the above
42. Polyploidy is more common in:
(a) Plants (b) Animals
(c) Bacteria (d) Virus
43. Whenever nitrite group is hydrolyzed (dil HCl) with water it always produces:
(a) Alcohol (b) Carboxylic acid
(c) Amines (d) Amides
44. A person who leaves his country and settles in another country is called:
(a) Emigrant (b) Immigrant
(c) Migrant (d) Aborigine
45. The center of porphyrins in the head region of hemoglobin is occupied by:
(a) Potassium (b) Sodium
(c) Magnesium (d) Iron
46. Syphilis is caused by:
(a) *Treponema palladium* (b) *Helicobacter spp*
(c) *Neisseria spp* (d) *Bactericides spp*
47. The organism developed with two

heads and one trunk is called:

- (a) Identical twins (b) Dizygotic twins
(c) Fraternal twins (d) Siamese twins
48. The paratrooper of mass 80Kg descends vertically at a constant velocity of 3 ms^{-1} taking the acceleration of free fall as 10 ms^{-2} . Find out what is the net force acting on him?
(a) Zero (b) 8.00 N upward
(c) 8.00 N downward (d) 240 N downward
49. The dimensional formula for change in momentum is same as that for:
(a) Force (b) Impulse
(c) Acceleration (d) Velocity
50. What is NOT true of 2 forces that give rise to a couple?
(a) They act in opposite directions
(b) They both act at the same point
(c) They both act on the same body
(d) They both have the same magnitude
51. The stress-strain graph for a metal is shown.
-
- What is the strain energy per unit volume of a rod made from this metal when the strain of the rod is 0.0107
(a) 10 kJ m^{-3} (b) 100 kJ m^{-3}
(c) 1.0 MJ m^{-2} (d) 10 MJ m^{-3}
52. A diffraction grating is used to

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measure the wavelength of monochromatic light, as shown in the diagram.



The spacing of the slits in the grating is 1.00×10^{-6} m. The angle between the first order diffraction maxima is 60.0° . What is the wavelength of the light?

- (a) 287 nm (b) 570 nm
(c) 574 nm (d) 940 nm
53. The cation that distort the electron cloud of NO_3^- ion more and facilitates its decomposition is:
(a) Li^+ (b) Mg^{++}
(c) Ca^+ (d) Be^{++}
54. The energy of electron in the first excited state of Hydrogen atom in J/atom is:
(a) 2.8×10^{-18} (b) 0.545×10^{-18}
(c) -2.18×10^{-18} (d) -1312.36
55. Unhybrid "p" orbitals on linear overlap:
(a) Always form $\text{Pi}(\pi)$ bond
(b) Always form "a" nor "n" bond
(c) Neither form "a" nor "n" bond
(d) Form more reactive and more unstable "n" bond
56. It's raining cats and dogs. So there are _____ cars on the road today.
(a) Few (b) a Few
(c) a big number of (d) a great deal of
57. He said to me, "traitor".

[Choose the correct indirect speech:]

- (a) He said to me that I was a traitor
(b) He told me that I have been a traitor.
(c) He called me a traitor
(d) He exclaimed with anger that I was a traitor.
58. The stage of plasmodium life cycle not related to human body is:
(a) Merozoite (b) Ooikinetes (c) Trophozoites (d) Gametozoites
59. In protein synthesis the initiator tRNA carrying amino acid methionine lard on which site of ribosome:
(a) E site (b) P site
(c) A site (d) C site
60. Goblets cells are:
(a) Unicellular exocrine gland
(b) Unicellular endocrine glands
(c) Multicellular exocrine gland
(d) Multicellular endocrine glands
61. The instantaneous current in a circuit is given by $I = \sqrt{2} \sin (wt + \phi)$ ampere what is the rms value of the current?
(a) 2 A (b) $\sqrt{2}$ A
(c) 1 A (d) $\frac{1}{\sqrt{2}}$ A
62. Which list shows electromagnetic waves in order of increasing frequency?
(a) Radio waves \rightarrow gamma rays \rightarrow ultraviolet \rightarrow infrared
(b) Radio waves \rightarrow infrared \rightarrow ultraviolet \rightarrow gamma rays
(c) Ultraviolet \rightarrow gamma rays \rightarrow radio waves \rightarrow infrared



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- (d) Ultraviolet → infrared → radio waves → gamma rays
63. What is the momentum of X-rays having wavelength 0.001nm?
(a) $6.63 \times 10^{-22} \text{ kg m s}^{-1}$
(b) $6.63 \times 10^{-27} \text{ kg m s}^{-1}$
(c) $6.63 \times 10^{-31} \text{ kg m s}^{-1}$
(d) $6.63 \times 10^{-34} \text{ kg m s}^{-1}$
64. Henderson-Hasselbalch equation is used to calculate the p^H of a buffer solutions. The correct representation of the equation is:
(a) $p^{K_a} - \log \frac{[Salt]}{[Acid]}$ (b) $p^{K_a} \times \log \frac{[Acid]}{[Salt]}$
(c) $K_a + \log \frac{[Salt]}{[Acid]}$ (d) $p^{K_a} + \log \frac{[Salt]}{[Acid]}$
65. If the p^H of the solution is 9 its OH⁻ ions concentration is:
(a) 10^{-5} (b) 5
(c) 10^{-9} (d) 9
66. The first stage in development of Xerosere is appearance of:
(a) Foliose lichens (b) Crustose lichens (c) Fruticose lichens (d) Climax stage
67. Mg⁺⁺ and Ca⁺⁺ are excreted in fishes through:
(a) Kidney (b) Gills
(c) Skin (d) All of the above
68. Vomit centre is located in:
(a) Pons (b) Mid brain (c) Cerebellum (d) Medulla
69. There are two charges +3μC and +8μC the ratio of the force acting on them will be:
(a) 3 : 1 (b) 1 : 1
(c) 11 : 8 (d) 3 : 8
70. Two radioactive samples S₁ and S₂ have half-lives 3 hours and 7 hours respectively. If they have the same activity at certain instant t, what is the ratio of the number of atoms of S₁ to S₂ at instant t?
(a) 9:49 (b) 49:9
(c) 3:7 (d) 7:3
71. The reciprocal of the conductance is called:
(a) Conductivity (b) Resistivity (c) Resistance (d) Inductance
72. The volume of CO₂ produced by heating 33.5g Li₂CO₃ at room temperature and pressure is (Mr Li₂CO₃ = 67g/mol):
(a) 22.4 dm³ (b) 12.0 dm³
(c) 11.2 dm³ (d) 24.0 dm³
73. The equation used to describe the behavior of ideal gases under standard conditions is:
(a) PV = nRT (b) PM = dRT (c) PVM = mRT (d) All of the above
74. The nuclei you think is invisible in NMR spectroscopy is:
(a) N¹⁴ (b) P³¹
(c) Cl³⁵ (d) C¹³
75. 'To the letter' means:
(a) Cursory (b) Enveloping a letter (c) Precisely (d) Reporting a problem
76. We have three test tubes having aqueous solutions of Ca(NO₃)₂, Ba(NO₃)₂ and K₂CO₃ respectively. On addition of dil H₂SO₄. Which test tube solution turns milky?
(a) Ca(NO₃)₂ solution (b) Ba(NO₃)₂ solution (c) K₂CO₃ solution (d) All turned milky



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77. The teacher said, "Amna, watch your steps".
[Choose the correct indirect speech:]
(a) The teacher ordered Amna that She should watch her steps.
(b) The teacher ordered Amna to watch your steps.
(c) The teacher ordered Amna to watch her steps.
(d) The teacher requested Amna to watch your steps.
78. Which one of the following is a shrub?
(a) *Parmelia* (b) *Aster*
(c) *Rhus* (d) *Banana*
79. In nitrogen fixing bacteria, the nitrogenase complex is sensitive to:
(a) O_2 (b) CO_2
(c) NO_2 (d) NO_3
80. Over eating psychological disorder is called:
(a) *Dyspepsia* (b) *Septecemia* (c) *Anorexia*
(d) *Bulimia*
81. Two railway trucks of masses m and $3m$ move towards each other in opposite directions with speeds $2v$ and v respectively. These trucks collide and stick together. What is the speed of the trucks after the collision?
(a) $v/4$ (b) $v/2$
(c) v (d) $5v/4$
82. A thin horizontal plate of area $0.036 m^2$ is beneath the surface of a liquid of density $930 kg m^{-3}$. The force on one side of the plate due to the pressure of the liquid is $290 N$. What is the depth of the plate beneath the surface of the liquid?
(a) $0.88 m$ (b) $1.1 m$
(c) $1.8 m$ (d) $8.7 m$
83. An electron and a proton enter a magnetic field with equal velocities which one of them experiences more force:
(a) Electron (b) Proton
(c) Both experience same force (d) Cannot be predicted
84. The chelating ligand out of the following is:
(a) CH_3COO^- (b) $(CH_2)_2(NH_2)_2$
(c) SCN^- (d) NO_2^-
85. The speed v of a liquid a tube depends on the change in pressure ΔP and the density ρ of the liquid. The speed is given by the equation.
$$v = k \left(\frac{\Delta P}{\rho} \right)^n$$

Where k is a constant that has no units. What is the value of n ?
(a) $1/2$ (b) 1
(c) $3/2$ (d) 2
86. The oxidation state of platinum in $[Pt(NH_3)_4(NO_2)Cl]SO_4$ is:
(a) III (b) II
(c) 0 (d) IV
87. The outer electronic configuration of Cu^+ ion is $4s^0 3d^{10}$ with this configuration the aqueous solution of copper (I) compound is:
(a) Blue (b) Greenish blue
(c) bluish green (d) Colourless
88. For the reaction.
$$CO(g) + \frac{1}{2}O_{2(g)} \rightarrow CO_{2(g)}$$



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- (a) $K_p > K_c$ (b) $K_p < K_c$
(c) $K_p = K_z$ (d) $K_p \geq K_z$
- 89.** Which way shall we go?
(The underlined word is)
(a) Demonstrative adjective
(b) Interrogative pronoun
(c) Interrogative adjective
(d) Exclamatory adjective
- 90.** An autoimmune disorders in which stiffness and information of vertebrae occurs is called as:
(a) Lupus (b) Scleroderma
(c) Ankylosis spondylitis (d) Juvenile dermatomyositis
- 91.** The study of fishes is:
(a) Ornithology (b) Ichthyology
(c) Herpetology (d) Herpetology
- 92.** Which of the following is absent in C4 plants:
(a) Calvin cycle (b) Bundle sheath cells
(c) Pcpco (d) CO_2 Fixation in Mesophyll
- 93.** Cyclic alkanes with greater angle strain are always:
(a) More stable (b) Less energetic
(c) More reactive
(d) Obey the general formula of normal alkanes
- 94.** Which one of the following is opposite in meaning to the word SYMPATHY?
(a) Apathy (b) Pathos
(c) Empathy (d) Jealousy
- 95.** Piriformis syndrome is associated with which of the following disorder:
(a) Arthritis (b) Sciatica
(c) Spondylosis (d) Disc slip
- 96.** Which one of the following is not an exclusive trait of arthropoda?
(a) Presence of wings (b) Jointed appendages
(c) Haemocoel (d) Chitinous exoskeleton
- 97.** Locomotary organ in leech is called.
(a) Setae (b) Chatae
(c) Parapodia (d) None of the above
- 98.** The power loss p in a resistor is calculated using the formula.
$$R = \frac{V^2}{P}$$

The uncertainty in the potential difference V is 3% and the uncertainty in the resistance R is 2%. What is the uncertainty in P ?
(a) 4% (b) 7%
(c) 8% (d) 11%
- 99.** A quantity x is to be determined from the equation. $X = P - Q$. P is measured as $(1.27 \pm 0.02)\text{m}$ and Q is measured as $(0.83 \pm 0.01)\text{m}$. What is the percentage uncertainty in z to one significant figure?
(a) 0.4% (b) 2%
(c) 3% (d) 2%
- 100.** The number of electrons in one coulomb of charge are:
(a) 6.25×10^{22} (b) 1.6×10^{20}
(c) 6.25×10^{20} (d) 9.1×10^{31}
- 101.** Students were decomposing CaCO_3 placed in a China dish by heating using burner in the laboratory. The "system" in this experiment is:
(a) China dish (b) Burner
(c) Laboratory (d) CaCO_2
- 102.** Male having Downs syndrome have sex chromosomes:
(a) XXY (b) XY
(c) XYY (d) XYYY



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- 103.** Darwins finches are found in:
(a) New Zealand (b) New Guinea (c) Galapagos Island (d) Australia
- 104.** Which of the following is the most economically important plant family?
(a) Poaches (b) Asteraceae (c) Rosaceae (d) Fabaceae
- 105.** In Simple Harmonic Motion this acceleration of the particle is zero when it?
(a) Velocity is zero (b) Displacement is zero (c) Both velocity and displacement are zero (d) Both velocity and displacement are maximum
- 106.** A typical mobile phone of 5.0 V and an internal resistance of 200 mΩ. What is the terminal P.D of the battery when it supports a current of 500 mA?
(a) 4.8 V (b) 4.9 V (c) 5.0 V (d) 5.1 V
- 107.** Which combination of up (u) and down (d) quarks forms a neutron?
(a) u u u (b) u u d (c) u d d (d) d d
- 108.** Speed with dipole moment equal to zero is:
(a) AlCl₃ (b) CH₄ (c) 1,4 - Dibromobenzene (d) All of the above
- 109.** Aqueous KOH causes SN₂-reaction in alkylhalides. On which of the following alkyl-halides KOH_{aq} would like to attack easily.
(a) CH₃ - CH₂ - Cl (b) CH₃ - CH₂ - Br (c) CH₃ - CH₂ - F (d) CH₃ - CH₂ - I
- 110.** Three reactions are given:
I. $\text{H}_2\text{SO}_4 + 2\text{HF} \rightarrow \text{F}_2 + \text{SO}_2 + 2\text{H}_2\text{O}$
II. $\text{H}_2\text{SO}_4 + 2\text{HBr} \rightarrow \text{Br}_2 + \text{SO}_2 + 2\text{H}_2\text{O}$
III. $\text{H}_2\text{SO}_4 + \text{BHI} \rightarrow \text{Al}_2 + \text{H}_2\text{S} + 4\text{H}_2\text{O}$
The strongest reducing agent in these reactions is:
(a) HI (b) HF (c) HBr (d) All of the above
- 111.** The number of gram atoms in 3g Hydrogen atoms is the same at the number of gram atoms in 48g of:
(a) N (b) C (c) O (d) O₂
- 112.** If the required excitation voltage is given, for which element the x - rays spectrum consists of three spectral lines i.e. K_α K_β L_α:
(a) Na (b) Boron (c) K (d) Ca
- 113.** SiO₂ is the only oxide that reacts with:
(a) HCl_{aq} (b) KOH_{aq} (c) Steam (d) SO₃
- 114.** I am afraid we have not got ___ sugar for making tea.
(a) Same (b) No (c) Any (d) Plenty
- 115.** Alcoholic fermentation is the sole mean of respiration in:
(a) Saccharomyces (b) Armillaria (c) Trichonympha (d) Balanitidium
- 116.** The edible part of Motherly escalation is:
(a) Ascocarp (b) Basidiocarp (c) Zygo carp (d) Pseudocarp
- 117.** XO in drosophila result in sterile:



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- (a) Female (b) Male
(c) Both (a) & (b) (d) No effect
- 118.** A stone is projected vertically upwards from the ground at an initial speed of 15 ms^{-4} . Air resistance is negligible. What is the maximum height reached by the stone?
(a) 0.76 m (b) 11 m
(c) 23 m (d) 110 m
- 119.** Evaporation depends upon:
(a) Surface area (b) Temperature
(c) both (a) & (b) (d) None of the above
- 120.** Students were heating CaCO_3 in an open container to produce CO_2 gas, $\text{CaCO}_{3(g)} \rightarrow \text{CaO}_{(s)} + \text{CO}_{2(g)}$. If we increase pressure on this system the:
(a) Equilibrium will shift towards right (b) Equilibrium will shift towards left
(c) Equilibrium will not be disturbed (d) System does not obey equilibrium rules
- 121.** Saba was sick on the bus [The underlined prepositional phrase function as a ____ in this sentence]
(a) Adjunct (b) Disjoint
(c) Conjunct (d) Adverbial
- 122.** The first successful surgery of heart was performed by Dr. Ludwig repairing a wound on which part:
(a) Right auricle (b) Right ventricle
(c) Left auricle (d) Left ventricle
- 123.** Lignin could not be expected in which part of the plant cell wall:
(a) Secondary cell wall (b) Middle lamella
(c) Cell membrane (d) Primary cell wall
- 124.** The following statement is true for the absorption spectra of photosynthesis:
(a) Chlorophyll a and b have same absorption spectra
(b) Chlorophyll a and b have different absorption spectra
(c) Chlorophyll a and carotenoids have same absorption spectra
(d) Carotenoids and chlorophyll b have same absorption spectra
- 125.** An electromagnetic wave travels in a straight line through a vacuum. The wave has a frequency of 6. THz. What is the number of wavelengths in a distance of 1.0 along the wave?
(a) 5.0×10^{-5} (b) 2.0×10^1
(c) 2.0×10^4 (d) 5.0×10^7
- 126.** What is the magnitude of a point charge which produces an electric field of $2 \frac{N}{C}$ at a distance of 60 cm?
(a) $8 \times 10^{-11} \text{ C}$ (b) $2 \times 10^{-12} \text{ C}$
(c) $3 \times 10^{-11} \text{ C}$ (d) $6 \times 10^{-10} \text{ C}$
- 127.** The alcohol given $\text{CH}_3 - \text{CH}_2 - \text{C}(\text{CH}_3)_2 - \text{OH}$, if oxidized with a strong oxidizing agent given:
(a) Aldehyde (b) Ketone
(c) Ether (d) None of the above
- 128.** The amount of heat required to raise the temperature of 10 moles of water from 70K to 80K (molar heat capacity of water 75.24J) is:
(a) 0.7524J (b) 7524J
(c) 95.24J (d) 572.4J
- 129.** The aqueous solution of which of the

following electrolyte will conduct electric current to large extent:

- (a) $Mg(OH)_2$ (b) H_2CO_3
(c) NH_4Cl (d) NH_4OH

- 130.** You are called names by him. (Choose the correct voice)
(a) He is calling you names
(b) He calls you names
(c) He called you names
(d) You are being called names by him

- 131.** In ECG QRS complex represents
(a) Atrial systole (b) Atrial diastole
(c) Ventricle systole
(d) Ventricle diastole

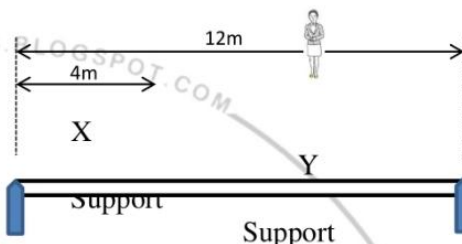
- 132.** The common name of rubella is:
(a) Whooping cough (b) German measles
(c) African sleeping sickness
(d) Tay Sach's disease

- 133.** A heterozygote fruit fly has more florescent pigments in their eyes than a wild homozygote fruit fly, this is an example of:
(a) Co-dominance (b) Incomplete dominance
(c) Over dominance
(d) Complete dominance

- 134.** To determine Young's modulus of a material of a given wire of length L we use:
(a) Melde's apparatus (b) Young's apparatus
(c) Searle's apparatus
(d) Cavendish apparatus

- 135.** An electron is projected horizontally from south to north in uniform horizontal magnetic field acting from west to east. The direction along which it will be deflected is:
(a) Northwards (b) Southwards
(c) Vertically upwards
(d) Vertically downwards

- 136.** A uniform horizontal footbridge is 12m long and weights 4000 N. It rests on two supports X and Y as shown.



A man of weight 600 N is at a distance of 4 m from support X. What is the upward force on the footbridge from support X?

- (a) 2200 N (b) 2300 N
(c) 2400 N (d) 2600 N

- 137.** A wire of diameter d and length l hangs vertically from a fixed point. The wire is extended by hanging a mass M on its end. The young modulus of the wire is E . The acceleration of free fall is g . Which equation is used to determine the extension x of the wire?

- (a) $x = \frac{ml}{T\pi d^2}$ (b) $x = \frac{mgl}{T\pi d^2}$
(c) $x = \frac{2mgl}{T\pi d^2}$ (d) $x = \frac{4mgl}{T\pi d^2}$

- 138.** A sound wave has a frequency of 2500 Hz and a speed of 1500 m s^{-1} . What is the shortest distance from a point of maximum pressure in the wave to a point of minimum pressure?

- (a) 0.15 m (b) 0.30 m
(c) 0.60 m (d) 1.20 m

- 139.** Initially one mole each N_2 and O_2 were made to react as,



If at equilibrium 0.25 moles of O_2 is present the equilibrium concentration of NO will be:

- (a) 0.50 moles (b) 0.125 moles
(c) 1.50 moles (d) 1.75 moles

140. The compound of manganese with zero reducing power is:

- (a) $KMnO_4$ (b) MnO_2
(c) $MnCl_2$ (d) $Mn_2(SO_4)_3$

141. Chemical reactions associated with hydrocarbons is / are:

- (a) Electrophilic addition
(b) Electrophilic substitutions
(c) Free radical substitutions
(d) All are possible

142. The Young's modulus of a given rod of uniform length L is given by the relation:

- (a) FL/A (b) FA/L
(c) $FL/\pi r^2 L$ (d) $FL/\pi r^2$

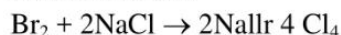
143. The inward and outward electric flux from a closed surface are respectively 8×10^3 units and 4×10^3 units then the net charge inside the closed surface is:

- (a) $\frac{-4 \times 10^3}{\epsilon_0}$ coulomb (b) $-4 \times 10^3 \epsilon_0$ coulomb
(c) $\frac{4 \times 10^3}{\epsilon_0}$ coulomb (d) 4×10^3 coulomb

144. A radioactive isotope has a half-life of 3 days. The time after which its activity is reduced to 6.25% of its original activity is:

- (a) 6 days (b) 8 days
(c) 12 days (d) 16 days

145. Students calculated the cell voltage for the reaction.



Through the formula $E^0_{cell} = E^0_{red} + E^0_{oxd}$ the answer was negative. It means that

- (a) The reaction is non-spontaneous and feasible
(b) The reaction is non-spontaneous and not feasible
(c) The reaction is spontaneous and feasible
(d) The reaction is spontaneous and not feasible

146. The non-carbonyl compound out of the following is:

- (a) $CH_3-CO-CH_3$ (b) $C_2H_5-\overset{OH}{\underset{|}{C}}-CH_3$
(c) $CH_3-\overset{NH_2}{\underset{|}{C}}-O$ (d) $CH_3-\overset{OR}{\underset{|}{C}}-O$

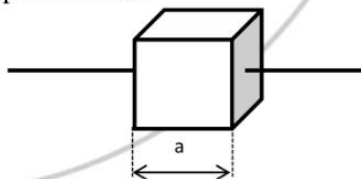
147. The empirical formula of the compound was found to be CH_2O . If the molar mass of the compound is 150 g/mol. The molecular formula of the compound is:

- (a) $C_6H_{12}O_6$ (b) $C_4H_8O_4$
(c) $C_5H_{10}O_5$ (d) $C_3H_6O_3$

148. 'Enlarge upon' means:

- (a) Explain in more detail
(b) To make taller
(c) To become large
(d) To measure

149. A metal cube with sides of length "a" has electrical resistance R between opposite faces.



What is the resistance between the opposite faces of a cube of the same metal with sides of length 3a?



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- (a) 9R (b) 3R
(c) R/3 (d) R/9
- 150.** Which particle is a fundamental particle?
(a) Electron (b) Hadron
(c) Neutron (d) Proton
- 151.** The nuclear equation shown has a term missing.
 ${}^{14}_6\text{C} \rightarrow {}^{14}_7\text{N} + {}^0_{-1}\beta + \dots$
What is represented by the missing terms?
(a) An antineutrino (b) An electron
(c) A neutrino (d) A position
- 152.** The Fridel crafts catalyst " AlCl_3 " used in the substitution reactions of Benzene is a good
(a) Electrophilic (b) Lewis acid
(c) electron deficient specie (d) Dear all properties
- 153.** The most reactive compound out of the following is:
(a) Ortho hydroxyl toluene
(b) Ortho chloric ethyl beacon
(c) Phenol
(d) Para ethyl benzoic acid
- 154.** Addition of soluble impurities into a liquid and solid respectively causes:
(a) Increase in boiling point of liquid and decrease in meeting point of solid
(b) Increase in both boiling and melting points
(c) Decrease in boiling point of liquid and increase in melting point of solid
(d) Decrease in both boiling and melting points
- 155.** Which of the following is correct in all respects?
(a) I have done matric in 2010
(b) This is an utensil
(c) The population of the world rises
(d) This is the best peach producing valley
- 156.** Which of the following is not the part of first line of defense?
(a) Sebum (b) Perspiration
(c) Interferon (d) Epidermis
- 157.** During the formation of addition polymertration, which smaller molecules you think are eliminated:
(a) H_2O (b) HCl
(c) NH_3 (d) No one is eliminated
- 158.** My mother offered me milk. But for my life. I could not drink it. [The underlined expression means.]
(a) However hard I may try
(b) Because of my life
(c) For the sake of my life
(d) During my life
- 159.** Which process of cell division is involved in gametes formation in funarla:
(a) Mitosis (b) Meiosis
(c) Amitosis (d) Binary Fission
- 160.** Closed vascular system is the characteristic of:
(a) Lycopsida (b) Sphenopsida
(c) Dicot (d) Monocot
- 161.** Common name of the Lotigo prolied is:
(a) Squid (b) Laligo
(c) Slug (d) Oyster
- 162.** The maximum energy of the electrons released in photocell is independent



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- of
(a) Frequency of incident light
(b) Internality of incident light
(c) Nature of cathode surface
(d) Wavelength of light
- 163.** A mass m is suspended from a spring of spring constant k . The angular frequency of oscillations of the spring is:
- (a) $\frac{k}{m}$ (b) $\sqrt{\frac{k}{m}}$
(c) $\frac{m}{k}$ (d) $\sqrt{\frac{m}{k}}$
- 164.** Which expression using S/ base units is equivalent to the volt?
(a) $\text{kg m}^2 \text{s}^{-1} \text{A}^{-1}$ (b) $\text{kg m s}^{-2} \text{A}$
(c) $\text{kg m}^2 \text{s}^{-1} \text{A}$
(d) $\text{kg m}^2 \text{s}^{-3} \text{A}^{-1}$
- 165.** If the overlap of Sp^3 hybrid orbitals in carbon atoms is smaller the bond so formed is:
(a) Weak (b) Strong
(c) Less energetic (d) More stable
- 166.** The minimum energy below which no reaction occur in reactants molecules is:
(a) Average K.E of the molecules
(b) Potential energy of the molecules
(c) Free energy of the molecules
(d) Activation energy of the molecules
- 167.** Amino acid leucine is coded by how many codons:
(a) 1 (b) 2
(c) 4 (d) 6
- 168.** Which of the following is not a fern?
(a) Pteris (b) Tmesipeteris
(c) Dryopeteris (d) Presidium
- 169.** Umbel of umbels is present in:
(a) Hydrocotyl (b) Carrot
(c) Iberis (d) Grapes
- 170.** A filament lamp has a resistance of 180Ω when the current in it is 500 mA. What is the power dissipated in the lamp?
(a) 45 W (b) 90 W
(c) 290 W (d) 360 W
- 171.** Orange light in a vacuum has a wavelength of 600 nm. What is the frequency of this light?
(a) 180 Hz (b) 5.0×10^5 Hz
(c) 1.8×10^{11} Hz (d) 5.0×10^{14} Hz
- 172.** A stationary sound wave has a series of nodes. The distance between the first and the sixth node is 30.0 cm. what is the wavelength of the sound wave?
(a) 5.0 cm (b) 6.0 cm
(c) 10.0 cm (d) 12.0 cm
- 173.** Whenever Pb shows inert pair effect it always form:
(a) Ionic bond (b) Covalent bond
(c) Co-ordinate covalent bond
(d) Metallic bond
- 174.** In the compound CO_2 and H_2O the hybridization in oxygen is respectively:
(a) Sp^2 and Sp^2 (b) Sp^2 and Sp^3
(c) Sp^3 and Sp^3 (d) Sp^3 and Sp^2
- 175.** According to M.O theory the number of molecular orbitals in O_2 are:
(a) 10 (b) 7
(c) 8 (d) 9
- 176.** I had an unexpected guest today. ___ my old classmate.
(a) it was (b) it is
(c) he was (d) she was
- 177.** Which of the following is a summer



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- variety:
(a) Figs (b) Cabbages
(c) Oranges (d) Pears
- 178.** The amount of methane in Biogas is approximately:
(a) 10–30% (b) 50–90%
(c) 50–75% (d) 60–75%
- 179.** Depolarization of neuron is characterized by:
(a) Na^+ into the axon and K^+ out of the axon
(b) K^+ into the axon and Na^+ out of the axon
(c) Na^+ and K^+ within the axon toward the axon terminal
(d) None of the above
- 180.** Doubly ionized atoms X and Y of two different elements are accelerated through the same P.D. on entering a uniform magnetic field they describe circular paths of radii R_1 and R_2 . The masses of X and Y are in the ratio of:
(a) $R_1 : R_2$ (b) $R_2 : R_1$
(c) $R_1^2 : R_2^2$ (d) $R_2^2 : R_1^2$
- 181.** The rest mass of Photon is m_0 . Its linear momentum, when it moves with the speed equal to half of the speed of light in space, will be:
(a) $3m_0c/4$ (b) $2m_0c/4$
(c) $m_0c/\sqrt{3}$ (d) $2m_0c/\sqrt{3}$
- 182.** The charge on the electron and proton is reduced to half. If the present value of Rydberg constant is R, then the new value of Rydberg constant will be:
(a) R/2 (b) R/4
(c) R/8 (d) R/16
- 183.** By the absorption of visible light, which of the following compounds gives smoggy air its brown tint?
(a) NO (b) SO_3
(c) NO_3^- (d) NO_2
- 184.** Regarding reactivity of the compounds having carbonyl group. The most reactive compound out of the following is:
(a) $\text{CH}_3\text{-CH}_2\text{-}\overset{\text{O}}{\parallel}\text{C}\text{-CH}_3$ (b) $\text{C}_2\text{H}_5\text{-}\overset{\text{O}}{\parallel}\text{C}$
(c) $\text{CH}_3\text{-}\overset{\text{O}}{\parallel}\text{C}\text{-H}$ (d) $\text{CH}_3\text{-}\overset{\text{O}}{\parallel}\text{C}\text{-OH}$
- 185.** She said, "What a lovely dress it is". [Choose the correct indirect speech:]
(a) She exclaimed that it is a lovely dress
(b) She exclaimed that it was a lovely dress.
(c) She exclaimed that what a lovely dress it was.
(d) She exclaimed what a lovely dress it is.
- 186.** The living phloem, cork and cork cambium is collectively called:
(a) Periderm (b) Protoderm
(c) Periblem (d) Bark
- 187.** All of the following acts as cloning vector except
(a) BAC (b) YAC
(c) Cosmids (d) EcoRi
- 188.** How many sperms are produced from fifty secondary spermatocyte?
(a) 200 (b) 100
(c) 50 (d) 150
- 189.** How many cubic nanometers, nm^3 , are in a cubic micrometer, μm^3 ?
(a) 10^6 (b) 10^9
(c) 10^8 (d) 10^{12}
- 190.** A man stands in the lift that is accelerating vertically downwards. Which statement describes the force exerted by the man on the floor?



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- (a) It is equal to the weight of the man
(b) It is greater than the force exerted by the floor on the man
(c) It is less than the force exerted by the floor on the man.
(d) It is less than the weight of the man
- 191.** The efficiency of a heat engine working between the freezing point and the boiling point of water is near to:
(a) 50% (b) 25%
(c) 12.5% (d) 6.25%
- 192.** An unknown gas diffuses S times slower than that of H₂. The molecular mass of the unknown gas is:
(a) 50 (b) 10
(c) 15 (d) 25
- 193.** Hydrogen bonding in H – F is stronger than H₂O and NH₃. The highest boiling point among the three is of:
(a) HF (b) NH₃
(c) H₂O (d) All have equal boiling points
- 194.** The type of isomerism present in the compound given.
- C/C=C\C

C/C=C/C
- (a) Structural (b) Optical
(c) Stereo (d) None of the above
- 195.** The main difference between catalysts and enzymes is:
(a) Enzymes are sharp in action than catalyst (b) Catalysis used in large amount than enzymes
(c) Catalysts are inorganic while enzymes are organic in nature
(d) Enzymes need p^H while catalysts do not
- 196.** Choose the related word for Broom on the analogy of Water: Splash.
(a) Whisper (b) Gush
(c) Swish (d) Screech
- 197.** The first hormone to be discovered was:
(a) Secretin (b) Testosterone
(c) Insulin (d) Thyroxin
- 198.** For defense against virus attack body produces:
(a) Antibodies (b) Histamines (c) Antigens
(d) Interferon's
- 199.** Short life cycle is a plant adaptation to survive in:
(a) High temperature (b) Low temperature (c) High soil pH (d) Low soil pH
- 200.** A transverse wave travels along a rope. The graph shows the variation of the displacement of the particles in the rope with distance along it at a particular instant.
- displacement / m

position / m
- At which distance along the rope do the particles have maximum upwards velocity?
(a) 0.5 m (b) 1.0 m
(c) 1.5 m (d) 2.0 m

BOM BANK OF MCQS





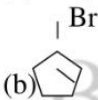

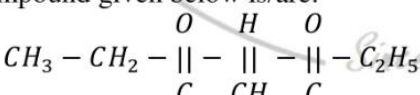
BANK OF MCQS

1. C	35. A	69. B	103. C	137. D	171. B
2. B	36. C	70. C	104. A	138. B	172. D
3. A	37. D	71. C	105. B	139. C	173. A
4. C	38. B	72. B	106. B	140. A	174. B
5. B	39. C	73. D	107. C	141. D	175. A
6. B	40. D	74. A	108. D	142. C	176. A
7. B	41. D	75. C	109. D	143. B	177. A
8. B	42. A	76. B	110. A	144. C	178. C
9. C	43. B	77. C	111. C	145. B	179. A
10. D	44. b	78. C	112. A	146. B	180. C
11. D	45. D	79. A	113. B	147. D	181. C
12. C	46. A	80. D	114. C	148. A	182. D
13. C	47. D	81. A	115. A	149. C	183. D
14. B	48. A	82. A	116. A	150. A	184. C
15. A	49. B	83. C	117. B	151. A	185. B
16. D	50. B	84. B	118. B	152. D	186. D
17. A	51. D	85. A	119. D	153. A	187. D
18. D	52. C	86. D	120. D	154. A	188. B
19. A	53. D	87. D	121. D	155. D	189. C
20. A	54. B	88. B	122. B	156. C	190. D
21. B	55. C	89. C	123. C	157. D	191. B
22. A	56. A	90. C	124. B	158. A	192. A
23. B	57. C	91. B	125. C	159. A	193. C
24. D	58. B	92. D	126. A	160. D	194. C
25. D	59. B	93. C	127. D	161. A	195. C
26. A	60. A	94. D	128. B	162. B	196. C
27. A	61. C	95. B	129. C	163. B	197. A
28. B	62. B	96. A	130. B	164. D	198. D
29. A	63. A	97. D	131. C	165. A	199. B
30. C	64. D	98. C	132. B	166. D	200. a
31. D	65. A	99. D	133. C	167. C	
32. C	66. B	100. C	134. C	168. B	
33. A	67. A	101. D	135. C	169. B	
34. A	68. D	102. B	136. C	170. A	



BANK OF MCQS

ETEA ENGINEERING 2018

- 1) Wire A has the same length and resistance as wire B. the diameter of A is double that of B. what is the ration of the resistivity of wire A to that f wire B?
 (a) 1 : 2 (b) 4 : 1 (c) 1 : 4 (d) 2 : 1
- 2) Three resistors of resistance 2 Ω , 4 Ω and 6 Ω are connected in parallel across a D.C supply. The ratio of the current through the 2 Ω resistor to the current through the 4 Ω resistor is
 (a) 1 : 2 (b) 2 : 1 (c) 1 : 4 (d) 1 : 6
- 3) If required conditions are provided, which compound on reaction $HOCl$ will not follow markownikol's rule:
 (a) $CH_3 - CH = CH - Br$


 (d) $CH_3 - \overset{Br}{|} = CH_2$
- 4) The number of Chiral center in the compound given below is/are:

 (a) 2 (b) 3 (c) Zero (d) 1
- 5) An alkyne that gives aldehyde on hydrolysis with water under proper conditions is:
 (a) $CH_3 - C \equiv C - CH_3$ (b) $CH_3 - C \equiv CH$
 (c) $CH_3 - CH_2 - C \equiv CH$ (d) None of the above
- 6) When Ahmad reached home last night, his family _____ their dinner
 (a) Would have eaten (b) had eaten
 (c) ate (d) have eaten
- 7) The series $1^2 + 3^2 + 5^2 + \dots + 99^2$, can be expressed as,
 (a) $\sum_{k=1}^{99} (2k-1)^2$ (b) $\sum_{k=1}^{99} (2k+1)^2$
 (c) $\sum_{k=1}^{50} (2k-1)^2$ (d) $\sum_{k=1}^{50} (2k+1)^2$
- 8) A line $y = mx + c$ will be tangent to parabola $y^2 = 4px$ if _____?
 (a) $p + mc = 0$ (b) $pm = c$
 (c) $pc - m = 0$ (d) $p - mc = 0$
- 9) If $\det(A^{-1}) = 5$, then $\det(A) =$
 (a) 5 (b) -5 (c) $\frac{1}{5}$ (d) $-\frac{1}{5}$
- 10) A particle moves along a curve with position vector $\vec{R} = \cos t \vec{i} + t\vec{j} + \sin t\vec{k}$, then its speed for $t = 2$ sec, will be:
 (a) $\sqrt{2}$ (b) $\sqrt{3}$ (c) 1 (d) None of the above
- 11) A ball iron, mass 1 kg, is dropped from the top of the building. The ball reaches the ground 5s. what is the velocity, in m/s, of the ball when it strikes the ground?



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- (a) 150 ms^{-1} (b) 99 ms^{-1} (c) 49 ms^{-1}
(d) 27 ms^{-1}
- 12) A girl sitting on a spinning bar stool with her legs folded, suddenly outspreads them, Her angular velocity will:
- (a) Decrease (b) Increase (c) Remain the same
(d) First increase and then decrease
- 13) Two force having magnitudes 3.5 N and 5.5N are acting on a body. Which one of the following cannot be the resultant of their possible sum?
- (a) 1.5 N (b) 2.5 N (c) 4.5 N (d) 6.5 N
- 14) Thermal stability is related to the polarizing power of the cation in the compound. Which of the following compounds having cation with a strong polarizing power?
- (a) MgCl_2 (b) AlCl_3 (c) LiCl (d) BaCl_2
- 15) Compound having the ability of showing inert pair effect is
- (a) (b) (c)
(d) All of the above
- 16) Which of the reactant pair you think, gives reaction?
- (a) (b) (c) (d)
- 17) Which one of the following term is not related for pollution?
- (a) Noise (b) air (c) radiation (d) none of the above
- 18) The compound of Cr(Chromium) with a strong reducing power is
- (a) (b) (c) (d) None of the above
- 19) Most of the student are keen _____ their studies.
- (a) in (b) on (c) of (d) all of the above
- 20) The domain of $f(x) = \sec x$ is
- (a) $(0,1) - \frac{\pi}{2}$ (b) $(-\frac{\pi}{2}, \frac{\pi}{2})$
(c) $(0,2) - (\frac{\pi}{2})$ (d) $(-\frac{\pi}{2}, \frac{\pi}{2})$
- 21) Which function obeys Euler's theorem directly.
- (a) $\tan^{-1} \left(\frac{x^2+y^2}{x-y} \right)$ (b) $\sin \left(\frac{xy^2}{x^2-y^2} \right)$
(c) $\tan \left(\frac{x^2+y^2}{x+y} \right)$ (d) $\ln (\sqrt{x} + \sqrt{y})$
- 22) If sum of even coefficient in the expansion of $(1+x)^n$ is 256. The value of n is
- (a) 7 (b) 8 (c) 9 (d) 10
- 23) The first law of thermodynamic is a statement which implies that
- (a) No heat enters or leaves the system
(b) The temperature remains constant
(c) All work is mechanical
(d) Energy is conserved
- 24) A generator produces 100KW of a potential difference of 10KW. The power is transmitted through cables of the total resistance 5Ω . How much power is dissipated in the cables?
- (a) 50W (b) 250W (c) 500W (d) 1000W
- 25) If a hole is bored through the center of the earth and a pebble is dropped in it, then it will
- (a) Stop at the center of earth
(b) Drop to the other site
(c) Execute SHM (d) Fall with a constant velocity
- 26) A body in equilibrium must not have
- (a) Kinetic energy (b) Velocity
(c) Momentum (d) Acceleration



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- 27) The oxidation and reducing agents respectively in the reaction given below are
 $H_2S + 2FeCl_2 \rightarrow 2FeCl_2 + 2HCl + S$
(a) S^{2+}, Fe^{3+} (b) Fe^{3+}, S^{1+} (c) Fe^{3+}, S^{2+} (d) S^2, Cl^{2-}
- 28) The orbital with highest energy is
(a) Hybrid (b) Non-Hybrid
(c) Molecular (d) All are of equal energy
- 29) The melting point of S crystalline solid by the addition of impurities
(a) Increases (b) Decreases
(c) Remains same (d) 1st decrease then increase
- 30) The teacher said to the students. "you can go out for 5 a short break"
[Choose the correct indirect speech]
(a) The teacher asked the students to go out for a short break.
(b) The teacher slowed the students to go out for a short break.
(c) The teacher requested the students to go out for a short break.
(d) The teacher ordered the students to go out for a short break.
- 31) If G_1, G_2, G_3, G_4 are four geometric means between a and b , then $(G_1, G_2, G_3, G_4)^4 = \frac{a^4 - b^4}{a - b}$?
(a) $(G)^4$ (b) $(G)^{1/4}$ (c) $(G)^{21}$ (d) $(G)^{16}$
- 32) Which of the following ordinary differential equation in non-linear.
(a) $\frac{d^2y}{dx^2} + 2x \frac{dy}{dx} + y = 3$
(b) $\frac{d^2y}{dx^2} + 4y \left(\frac{dy}{dx}\right)^2 + 2y = \cos X$
(c) $\frac{dv}{dt} = 32$ (d) $\frac{d^2y}{dx^2} + 3 \frac{dy}{dx} + 11y = 3x$
- 33) Let $f(x) = \frac{2x+1}{x-1}$ the domain of $f^{-1}(x)$ is
(a) (b) (c) (d)
- 34) If the momentum of a body decreases by 20% the percentage decrease in K.E will be:
(a) 44% (b) 36% (c) 28% (d) 20%
- 35) An object travels at constant speed around a circle of radius 1.0 m in 1.0 s. What is the magnitude of its acceleration?
(a) Zero (b) 1.0 ms^{-2} (c) $2\pi \text{ ms}^{-2}$
(d) $4\pi^2 \text{ ms}^{-2}$
- 36) A source contains initially N_0 nuclei of a radioactive nuclide. How many nuclei have decayed after a time interval of three half-lives?
(a) $N_0/8$ (b) $2N_0/3$ (c) $N_0/3$ (d) $7N_0/8$
- 37) Satellites revolve around the earth in a circular orbit. What is the relationship between the radius r of their orbits and the orbital speeds?
(a) $v \propto r^2$ (b) $v \propto r$ (c) $v^2 \propto 1/r$ (d) $v \propto 1/r^2$
- 38) The unpaired electron in the molecule of NH_3 is:
(a) 0 (b) 1 (c) 2 (d) 3
- 39) Choose the one that cannot be classed as buffer system.
(a) KH_2PO_4 / H_3PO_4 (b) $NaClO_4 / HClO_4$ (c) CH_3COOH / CH_3COONa
(d) NH_4OH / NH_4Cl
- 40) White phosphorous catches fire spontaneously in air forming a mixture of oxides. Select the correct oxides
(a) P_4O_6 & P_2O_3 (b) P_5O_{10} & P_3O_6



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- (c) P_2O_4 & P_4O_8 (d) P_4O_6 & P_4O_{10}
- 41) Saqib was arrested and charged _____ murder.
(a) into (b) on (c) with (d) near
- 42) Let an oblique triangle ABC dimensions $a = 30$ $b = 70$ and $\beta = 85^\circ$. Then for finding " α ", we use _____?
(a) Sine Law (b) Cosine Law
(c) Tangent Law (d) Both (a) & (b)
- 43) The n^{16} term of A.P in the series $1 + 4x + 7x^2 + \dots$
(a) $3n + 2$ (b) $n + 1$ (c) $n + 3$
(d) $3n - 2$
- 44) The sum of infinite arithmetic series is:
(a) (b) (c) (d)
- 45) $x = 0$, is the solution of the inequality
(a) $x > 0$ (b) $3x + 4 < 0$ (c) $2x + 3 < 0$ (d) $x - 2 < 0$
- 46) What is represented by the gradient of a graph of force F (vertical axis) against extension x (horizontal axis)?
(a) Elastic limit (b) Spring constant
(c) Stress (d) Young modulus
- 47) The minute hand of a large clock is 3.0m long. What is its mean angular speed?
(a) $1.4 \times 10^{-4} \text{ rad s}^{-1}$ (b) $1.7 \times 10^3 \text{ rad s}^{-1}$
(c) $5.2 \times 10^3 \text{ rad s}^{-1}$ (d) $3.0 \times 10^3 \text{ rad s}^{-1}$
- 48) If a stationary electron is subjected to a uniform magnetic field it will be
(a) Accelerated in the direction of field it will
(b) Caused to move in a circular path
(c) Caused to oscillate about a fixed point
(d) Unaffected
- 49) Alkene that do not follow cis-trans isomerism is:
(a) But-2-ene (b) 1 chloropropene
(c) 1,1 dichloropropene (d) 1,2 dichlorethene
- 50) 2-Bromopropene on reaction with $C_2H_5S^-$ thio alcohol under goes
(a) Elimination reaction (b) Substitution reaction
(c) No reaction because $C_2H_5S^-$ is a stronger base (d) Addition reaction
- 51) The oxidation number of carbon in $Mg(HCO_3)_2$ is:
(a) +4 (b) -4 (c) -2 (d) Zero
- 52) He said, "I do not want to see any of you, go away".
[Choose the correct indirect speech:]
(a) He said that he did not wish to see any of you and go away
(b) He said that they did not wish to see any of us and went away
(c) He said that he did not wish to see any of them and went away
(d) He said that he did not wish to see any of them and ordered them to go away
- 53) Which test of the following would you suggest to distinguish between the compounds?
$$R-\overset{\overset{O}{\parallel}}{C}-H \text{ and } R-\overset{\overset{O}{\parallel}}{C}-R$$

(a) Baeyer's reagent (b) Lucas reagent
(c) Tollens reagent (d) None of the above
- 54) Choose the correct sentence.



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- (a) The new Sultan, entitled to four wives prefer, monogamy.
(b) The new Sultan, entitled to four wives, preference monogamy.
(c) The new Sultan, entitled to four, wives preference monogamy.
(d) The new Sultan, entitled to four wives, prefers monogamy.
- 55) Choose the correct option for parabola, $f(x) = -x^2 + 4x - 5$
(a) Vertex (2, -1), opens upward
(b) Vertex (2, 1), opens downward
(c) Vertex (2, -1), opens downward
(d) Vertex (2, 1), opens upward
- 56) The co-efficient of middle term in the expansion of $\left(\frac{x}{9} + \frac{9}{x}\right)^2$ is
(a) $\binom{2}{0}$ (b) $\binom{2}{1}$ (c) $\binom{2}{2}$ (d) None of the above
- 57) The major axis of the ellipse $4x^2 + 25y^2 - 8x + 100y + 4 = 0$ is
(a) Parallel to $x = axis$
(b) Parallel to $y = axis$
(c) On $x = axis$
(d) On $y = axis$
- 58) Two electrically neutral materials are rubbed together. One acquires a net positive charge. The other must have:
(a) Lost electrons.
(b) Gained electrons.
(c) Lost protons.
(d) Gained protons
- 59) If 1ng of mass converts into energy, how many joules of heat will be generated?
(a) $3 \times 10^{-3} \text{J}$
(b) $3 \times 10^3 \text{J}$
(c) $9 \times 10^{-3} \text{J}$
(d) $9 \times 10^4 \text{J}$
- 60) When the light from two lamps falls on a screen, no interference pattern can be obtained. Why is this?
(a) The lamps are not point sources
(b) The lamps emit light of different amputation
(c) The light from the lamps is not coherent
(d) The light from the lamps is white
- 61) $\int \frac{1}{1/4 - x^2} dx = \text{---}$
(a) $\ln \left| \frac{1-2x}{1+2x} \right|$
(b) $\ln \left| \frac{1+2x}{1-2x} \right|$
(c) $\frac{1}{2} \ln \left| \frac{4+x}{4-x} \right|$
(d) $\frac{1}{2} \ln \left| \frac{1+4x}{1-4x} \right|$
- 62) For a square matrix $A = [a_{ij}]$, the condition $a_{ij} = 0, \forall i \neq j$ and $a_{ij} = -1, \forall i = j$ hold for:
(a) Diagonal matrix (b) Unit matrix
(c) Scalar matrix (d) Skew-Symmetric
- 63) Three bulbs of rating 60 W, 80 W and 100 W are connected in series to work on 240 V, which bulb will glow most brightly
(a) 60 W (b) 80 W
(c) 100 W (d) All will burn equally bright
- 64) The SI unit of magnetic flux density is:
(a) $\text{N A}^{-1} \text{m}$ (b) $\text{N A}^{-1} \text{m}^2$ (c) N A m^{-2} (d) N A m
- 65) An electron volt is a unit of
(a) Electric potential (b) Charge
(c) Electric current (d) Energy
- 66) "The energy change in a closed cycle from initial to final state is zero". This statement is obeyed by:



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- (a) Born Haber cycle
(b) Law of conservation of energy
(c) First law of thermodynamics
(d) All of the above
- 67) Chrome plating is related to:
(a) Daniel cell (b) Voltaic cell
(c) Electrolytic cell (d) Fuel cell
- 68) X-rays with lowest energy is:
(a) K_α (b) L_α (c) K_β (d) K_γ
- 69) Altruistic
[Choose the correct meaning:]
(a) Unselfish concern for the welfare of others
(b) Avoiding disturbance
(c) Hating people for no particular reason
(d) Artistic tendencies
- 70) The fourth derivative of $f(x) = 8^{4x}$ is
(a) $64 \cdot 8^{4x} (\log 8)$
(b) $256 \cdot 8^{4x} (\log 8)^4$
(c) $256 \cdot 8^{4x} (\log 8)$
(d) $64 \cdot 8^{4x} (\log 8)^4$
- 71) Which compound with the given information has greater mass in kg?
(a) $22.4 \text{ dm}^3 \text{ N}_2$ at STP
(b) 1 mole of CO
(c) 6.02×10^{23} molecules of C_2H_6
(d) All have equal mass
- 72) $2\text{KClO}_{3(s)} \rightarrow 2\text{KCl}_{(s)} + 3\text{O}_{2(g)}$
 $\text{MrKClO}_3 = 122.5 \text{ g/mol}$
For the production of 33.6 dm^3 of O_2 at STP the mass of KClO_3 to be decomposed is:
(a) 245.0 g (b) 61.25 g
(c) 122.5 g (d) 367.5 g
- 73) All are anisotropic at room temperature except:
(a) CCl_4
- (b) AgNO_3
(c) CdS
(d) BaCO_3
- 74) For an average man it is very hard to earn bread and butter in many countries.
[Choose the correct meaning of the underlined idiom:]
(a) Meals (b) Livelihood
(c) To earn their names (d) Bread along with butter
- 75) The n^{th} term formula for 2, 3, 5, 6, 11, is ?
(a) $2n - 1$ (b) $2n + 1$
(c) a_n (d) None of the above
- 76) For the inequality $2x - 5y \geq 10$, the intercepts are?
(a) (5, -2) (b) (5, 2)
(c) (-2, 5) (d) (2, -5)
- 77) If $\vec{a}, \vec{b}, \vec{c}$ are the three non-zero vectors, then the expression $\vec{a} \cdot (\vec{b} \times \vec{c})$ is:
(a) Scalar triple product
(b) Volume of parallelepiped
(c) Dot product (d) Meaningless
- 78) The maximum kinetic energy of photoelectrons emitted depends upon:
(a) Intensity of incident light
(b) Frequency of incident light
(c) Temperature of the metal surface
(d) None of the above
- 79) The range of the function,
$$f(x) = \begin{cases} (3x+4), & \text{for } 3x-4 \leq 0 \\ -(3x+4), & \text{for } 3x+4 < 0 \end{cases}$$
 is
(a) $(-\infty, 0)$ (b) $(0, \infty)$
(c) $(0, \infty)$ (d) $(-\infty, 0)$
- 80) The graph of $y = \dots\dots\dots$
(a) x-axis (b) y-axis
(c) at $x = 0$ with y-axis (d) None of the above



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- 81) What is the magnitude of the momentum of particle of its Wavelength is 0.02?
(a) 0.5 h (b) 50 h
(c) 5×10^3 h (d) 5×10^{10} h
- 82) A photon is
(a) A charged particle (b) An electron-positron pair
(c) A packet of energy (d) Neutron
- 83) The gravitation field strength on the surface of the Earth is g. the gravitational field strength on the surface of a planet of thrice the radius and the same density is:
(a) 5 g (b) 6 g (c) 3 g (d) $g/9$
- 84) Regarding liquification of gases, the brightest critical temperature at a fixed pressure is of:
(a) $SO_{3(g)}$ (b) $NH_{3(g)}$
(c) $Cl_{2(g)}$ (d) $CO_{2(g)}$
- 85) A student dissolved 50.5g KNO_3 ($KHO_3 = 101.0$ g/mol) in 1000 g distilled water and allowed to boil. The solution started boiling at:
(a) 100.52 °C (b) 100 °C
(c) 101.04 °C (d) KNO_3 insoluble in water
- 86) At temperature of -10°C which one doesn't behave the property of molecular crystal among the following is:
(a) Phosphorous (b) Water
(c) Sucrose (d) None of the above
- 87) The hunter's fatal accident _____ in the newspaper yesterday.
(a) is reported (b) will be reported
(c) was reported (d) was reporting
- 88) The slope of the tangent at each point on the graph is definitely measured by:
(a) $f(x)$ (b) $f'(x)$
(c) $f''(x)$ (d) $\int f(x)$
- 89) The correct option of $5! C_5^{10}$ is:
i) C_5^{10}
ii) P_5^{10}
iii) $10C_5^{10}$
(a) i only (b) ii only
(c) i and ii (d) ii and iii
- 90) A thermistor is a semiconductor device whose resistance.
(a) Decreases as its temperature increase
(b) Doesn't vary as its temperature increase
(c) Decreases as the temperature decrease
(d) Doesn't vary as its temperature decrease
- 91) A medical lab has a 16 g of sample of radioactive isotopes. After 6 hours it was found that 12 g of sample have decayed. The half-life of the isotope is:
(a) 12 hours (b) 6 hours (c) 2 hours
(d) 3 hours
- 92) The total energy input E_m is partly transferred to useful energy output U, and partly to energy that is wasted W. what is the efficiency of the process?
(a) $(U/W) \times 100 \%$ (b) $(W/E_m) \times 100 \%$
(c) $(U/E_m) \times 100 \%$ (d) $(U + W) / E_m \times 100 \%$
- 93) $(CH_3)_3C - CH_2 - Br$ cannot undergo elimination reaction with alcoholic KOH . It is because:
(a) Alcoholic KCH is not a good choice
(b) It is tertiary alkyl halide
(c) For elimination strong base is needed



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- (d) There is no β -hydrogen in the compound
- 94) The electronics configuration of titanium is $1S^2 2S^2 2P^4 3S^2 3P^6 4s^2 3d^2$
Which titanium compound unlikely to exist?
(a) $K_2 TiO_4$
(b) $K_3 TiF_6$
(c) $TiCl_3$
(d) TiO
- 95) Bromo ethane on reaction with KCN gives compound "x". The compound "x" on reduction with Hydrogen (nascent) gives:
(a) $CH_3 - CH_3$
(b) $CH_3 - CH_2 - CH_2 - NH_2$
(c) $CH_3 - CH_2 - COOH$
(d) $CH_3 - CH_2 - CH_2 - NO_2$
- 96) To make a clean breast of something means:
(a) To do the cleaning
(b) To carefully avoid a trouble
(c) To clearly admit something
(d) Both (a) & (b)
- 97) I have seen the teacher outside the class this morning.
[Choose the correct voice]
(a) The teacher has seen me outside the class this morning
(b) The teacher have been seen outside the class this morning
(c) The teacher were seen outside the class this morning
(d) The teacher has been seen by me outside the class this morning.
- 98) If the initial approximation is $x_0 = 0$, then for which of the following function Newton's Raphson is applicable:
(a) $f(x) = x^3 + 2x - 1$ (b)
 $f(x) = \frac{1}{\sin x}$
(c) $f(x) = \frac{1}{x}$ (d) $f(x) = \cot x$
- 99) If ABC is an equilateral triangle with side "C" then its area is
(a) $\frac{\sqrt{3}c}{4}$ (b) $\frac{\sqrt{3}c^2}{4}$
(c) $\frac{\sqrt{3}c}{2}$ (d) $\frac{\sqrt{3}c^2}{2}$
- 100) Which pair of lines have a single point of intersection?
(a) $x + y = 1, 2x + 2y = 2$
(b) $x + y = 1, x + y = 0$
(c) $x + y = 1, x - y = 0$
(d) None of the above
- 101) What is the circumference of a circle whose area is 100π ?
(a) 10π (b) 20π (c) 10 (d) 20
- 102) The number of significant figures in the measurement of 5.005×10^{-3} s is,
(a) 2 (b) 3 (c) 4 (d) 5
- 103) A student measures a current as 0.5A. Which of the following correctly expresses this result?
(a) 50 mA (b) 50 MA (c) 500 mA
(d) 500 MA
- 104) Which electronic Transition is associated with propanal by absorbing uv/visible radiations?
(a) $n \rightarrow \sigma^4$ (b) $n \rightarrow \pi^4$ (c) $\pi \rightarrow n^4$
(d) $\sigma \rightarrow \sigma^4$
- 105) In magnetic field the charge at rest experiences
(a) no force (b)
maximum force
(c) minimum force (d)
perpendicular force




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- 106) Two bodies with kinetic energies in the ratio of 4 : 1 are moving with equal linear momentum. The ration of their masses is
(a) 1:2 (b) 1:1 (c) 4:1
(d) 1:4
- 107) The solubility of $\text{Ag}_2\text{Cr}_2\text{O}_7$ at 25°C was 2.0×10^{-5} M. its K_{sp} value is
(a) 3.2×10^{-14} (b) 4.0×10^{-10}
(c) 8.0×10^{-25} (d) 8.0×10^{-10}
- 108) The specie with strongest conjugate base in aqueous solution among the following is
(a) HI (b) HNO_3 (c) CH_3COOH (d) HClO_4
- 109) Higher the activation energy for a reaction
(a) Slow is the rate of reaction
(b) Fast is the rate of reaction
(c) Moderate is the rate of reaction
(d) Activation energy is no related to the rate of reaction
- 110) You cannot pup the ocean dry.
[Choose the correct voice]
(a) The ocean cannot be dry pump by you
(b) You cannot dry the ocean by pumping
(c) By pumping the ocean cannot dried by you
(d) The ocean cannot be pumped dry by you
- 111) For the approximate root of $f(x) = 0$ in $[a, b]$, n is necessary that
(a) $f(x)$ is continuous & $f(a) > 0, f(b) > 0$
(b) $f(x)$ is continuous & $f(a) < 0, f(b) < 0$
(c) $f(x)$ is discontinuous & $f(a) > 0, f(b) < 0$
(d) $f(x)$ is continuous & $f(a) > 0, f(b) < 0$
- 112) Angle of rotation for removing "xy" term from conic equation is:
(a) $\theta = \frac{1}{2} \tan^{-1} \left(\frac{2}{a+b} \right)$
(b) $f(x)$ is continuous & $f(a) < 0, f(b) < 0$
(c) $f(x)$ is discontinuous & $f(a) > 0, f(b) < 0$
(d) $f(x)$ is continuous & $f(a) > 0, f(b) < 0$
- 113)
- 114)
- 115) The prefix "term" stands for
(a) 10^6 (b) 10^4 (c) 10^3 (d) 10^{12}
- 116) The force "F" on a charged particle "q" moving with velocity "v", parallel to magnetic field "B" is given by
(a) $F=qvB$ (b) $F=qE$ (c) $F=0$
(d) $F=1LB$
- 117) The magnitude of horizontal component of a force 10N is 6N. the magnitude of its vertical component is
(a) 10N (b) 4N (c) 8N (d) 12N
- 118) Select hydrogen carbonate with is comparatively most stable thermal composition.
(a) NaHCO_3 (b) KHCO_3 (c) RbHCO_3 (d) CsHCO_3
- 119) Methane thiol and ethane is added to the natural gas
(a) To make combustion of natural gas very easy
(b) To increase the boiling point
(c) To detect the gas leakage by smell
(d) Both a and c
- 120) Which of the following reactants when react produce ester?



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- (a) CH_3CH_2-OH and PCl_3
(b) CH_3COOH and CH_3-O-CH_3
(c) C_2H_5OH and $HCOOH$
(d) CH_3OOH and CH_3CHO
- 121) "Disdain"
[Choose the word with opposite meaning]
(a) Haughtiness (b) Erroneous
(c) Contempt (d) respect
- 122) Choose the correct option for the line $x=8$, and circle $x^2 + y^2 - 6x - 4y - 12 = 0$
(a) Touch each other
(b) Intersect each other
(c) Passes out side
(d) None of the above
- 123) $\lim_{x \rightarrow 0} \frac{(1+x)^n - 1}{x}$
(a) 50 (b) 0 (c) 1 (d) n
- 124) When equation of normal to a circle $x^2 + y^2 = 5$ is $2x - y = 0$, then equation of tangent will be
(a) $x - 2y = 5$ (b) $x + 2y = 5$
(c) $2x + y = 5$ (d) $2x + y = 0$
- 125) Maths
- 126) If 13.6 eV energy is required to ionize the hydrogen atom, then the energy required to remove an electron from $n=2$ is
(a) 10.2eV (b) 0eV (c) 3.4eV
(d) 8.8eV
- 127) Keeping the magnetic field and velocity of the particles same, which particle will show the most?
(a) β Particle (b) α Particle (c) γ rays
(d) neutrons
- 128) In vacuum all electromagnetic waves have the same
(a) energy (b) speed (c) frequency
(d) wavelength
- 129) The molecule of maltose sugar is given below, it bears

(a) Ether linkage (b) Peptide linkage
(c) Ester linkage (d) Carbon carbon linkage
- 130) The correct order of the complete reduction of propanoic acid is CH_3-CH_2-C-OH
(a) $CH_3-CH_2-C-CH_3$ (b) $CH_3-CH_2-CH_2-CH_3$
(c) CH_3-C-H (d) CH_3-CH_2-OH
- 131) Which one of the following is not a characteristic of stationary wave?
(a) Half wavelength is half the distance between the adjacent nodes.
(b) Amplitude is not the same
(c) Phase is identical between two adjacent nodes
(d) Energy of the stationary waves travels outwards
- 132) The flame color of Na is yellow, Ca is brick red and Cs is apple green. Which radiation among the following travel with highest speed?
(a) Yellow (b) green (c) violet
(d) All travel with the same velocity
- 133) The standard reduction potential of two half cells reaction are give
 $Cr^{+3} + 3e^- \rightarrow Cr \quad e^0 = 0.34V$
 $Fe^{+3} + 3e^- \rightarrow Fe \quad e^0 = 0.77V$
(a) Cr reduces and acts as anode
(b) Fe reduces and acts as anode
(c) Cr reduces and acts as anode
(d) Fe oxidizes and acts as anode



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- 134) The compound with highest negative ions is:
(a) NaCl (b) K_3P (c) Na_2S (d) Ca_3S_2
- 135) English
- 136) Physics
- 137) The integration
- 138) If $a_{12}=x$, $a_{21}=y$, and $a_{14}=z$ are terms of G.P then
(a) $x,y = z^2$ (b) $x,z = y^2$
(c) $y,z = x^2$ (d) $x,y = z$
- 139) The force between two charged bodies is "F". if one of the charge is doubled and the distance between them is halved, the force acting on each charged body is:
(a) 2F (b) 4F (c) 8F
(d) 16F
- 140) Kirchoff's first law is based upon law of conservation of
(a) charge (b) energy (c) mass
(d) momentum
- 141) Physics
- 142) Physics
- 143) Physics
- 144) According to VSEPR theory, in which of the following molecules the electron pair geometry is pyramidal?
(a) CH_3 (b) NH_3 (c) BF_3 (d) None of the above
- 145) The passenger said to the taxi driver, "thank you" [choose the correct indirect speech]
(a) The passenger said to the taxi driver thank you
(b) The passenger said thank you to the taxi driver
(c) The passenger thanked the taxi driver
(d) The passenger thanks the taxi driver
- 146) The multiplicative identity in the set of complex number is
(a) (0,0) (b) (0,1) (c) (1,0)
(d) (1,1)
- 147) Phosphorous exists in nature as tetra atomic molecule. The number of atoms present in one gram molecule of phosphorus are:
(a) 6.023×10^{23} (b) $2,6.023 \times 10^{23}$
(c) $3 \times 6.023 \times 10^{23}$ (d) None of the above
- 148) When an electric current is passed through neon gas. It produces
(a) Plasma (b) light (c) both plasma and light
(d) plasma. Light and sound
- 149) Physics
- 150) Some one is knocking at the door. [choose the correct voice]
(a) The door has ben knocked at
(b) The door was knocked at by some
(c) The door was being knocked by someone
(d) The door is being knocked at
- 151)
(a) $\frac{-y}{x^2+y^2}$ (b) $\frac{y}{x^2+y^2}$
(c) Both plasma and light (d) Plasma, light and sound
- 152) A circle of radius 3 touch both the end of 4th quadrant has center
(a) (3,3) (b) (-3,3) (c) (3,3)
(d) (-3,-3)
- 153) The expression $\left(9 + \frac{1}{x}\right)^{-\frac{1}{3}}$ is valid only ----?
(a) $|x| > 9/2$ (b) $|x| < 1/9$



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- (c) $|x| < 9/2$ (d) $|x| > 2/9$
- 154) Chemistry
- 155) Chemistry
- 156) physics
- 157) The energy stored in the charged capacitor is given by
(a) $\frac{1}{2} QV$ (b) $\frac{1}{2} C^2 V^2$ (c) $\frac{1}{2} CV$ (d) $\frac{1}{2} QV^2$
- 158) A spring obeying Hook's law has an length of 50 mm and a spring constant of 400N/m what is the tension in the spring when its overall length is 700mm?
(a) 8.0N (b) 28N (c) 160N (d) 400N
- 159) In a transition state the reactant are
(a) High stable (b) moderately stable
(c) Highly unstable (d) in the low energy state
- 160) Choose the reagent used to test the presence of Fe... Ions in solution with the formation of intense red color.
(a) NaSCN (b) KSCN
(c) NH_4CNS (d) all of the above
- 161) Which of the following ions contain one unpaired electron?
(a) Zn^{+2} (b) K^{+1} (c) Cu^{+2} (d) Na^{+1}
- 162) He said. "I will pass the exam with good marks"
[Choose the correct speech]
(a) He said that he would pass the exam with good marks.
(b) he said that I would pass the exam with good marks.
(c) He said with pride that he will pass the exam with good marks.
(d) he told that I would pass the exam with good marks.
- 163) A student estimate e that the probability of passing "ETEA" test is 8/9. What is the probability of failing the test?
(a) 7/9 (b) 2/9 (c) 1/9 (d) 3/9
- 164) $\frac{d....}{....} = \frac{....}{....}?$
(a) $-\cos \alpha \sin x$ (b) $-\sin \alpha \cos x$
(c) $-\sin \alpha \sin x$ (d) $-\cos \alpha \cos x$
- 165) Let $f(x)$ be a function such that $f'(c) = 0$ if $f''(c) > 0$ then which of the following is true
(a) Relative mini, concave down
(b) Relative max, concave up
(c) Relative max, concave down
(d) Relative mini, concave up
- 166) The molality of 2.0g NaOH (Mr = 40g/mol) in 250g distilled water at 4°C will be exactly equal to
(a) 0.20m (b) 0.25m (c) 1.20m (d) 0.5m
- 167) Neutralization is always an exothermic phenomena. Which neutralization reaction given below evolve more heat?
(a) $NaOH_{(aq)} + HClO_{4(aq)}$
(b) $KOH_{(aq)} + HNO_{3(aq)}$
(c) $NaOH_{(aq)} + H_2SO_{4(aq)}$
(d) all evolve the same heat
- 168) The cashier says to them, "have you counted the money".
[Choose the correct indirect speech]
(a) The cashier told them that they have counted the money.
(b) The cashier says to them if they have counted the money.
(c) The cashier says to them if they had counted the money.



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- (d) The cashier asks them if they have counted the money.
- 169) The derivate of the function in $[\cos(\ln x)]$ is
(a) $\frac{x}{\tan(\ln x)}$ (b) $\frac{\tan(\ln x)}{x}$
(c) $-\frac{\tan(\ln x)}{x}$ (d) $\frac{\cot(\ln x)}{x}$
- 170) The line $ax + by + c = 0$, will be vertical, when _____?
(a) $b = 0$ (b) $a = 0$
(c) $a \neq 0, b = 0$ (d) $a \neq 0, b \neq 0$
- 171) Equation of a circle Centre at $(-5, 4)$ and tangent to y-axis is;
(a) $(x+5)^2 + (y-4)^2 = 25$
(b) $(x+5)^2 + (y-4)^2 = 16$
(c) $(x+5)^2 + (y+4)^2 = 25$
(d) $(x-5)^2 + (y+4)^2 = 16$
- 172) Two objects of different masses falling freely form the same heights above the earth's surface will experience the same
(a) Change in momentum per unit time
(b) Change in velocity per unit time
(c) Decrease in gravitational potential energy per unit time
(d) Increase in kinetic energy per unit time
- 173) Which one of the following varies when an object execute simple harmonic motion?
(a) Angular frequency (b) Total energy
(c) Force (d) amplitude
- 174) Which of the following is the correct option for the expression=
(a) $8\sqrt{2}$ (b) $4\sqrt{2}$ (c) $2\sqrt{2}$ (d) $\frac{1}{4\sqrt{2}}$
- 175) One factor of the polynomial $p(x) = x^2 + 5x^2 + 19z - 25$ is:
(a) $z + 1$ (b) $z - 1$ (c) $x + 1$ (d) $x - 1$
- 176) The correct option for $\tan 3\theta$ is:
(a) (b) (c) (d)
- 177) The production of characteristic K_α x rays the electron transition is from
(a) $n = 1$ to $n = 2$ (b) $n = 3$ to $n = 2$
(c) $n = 2$ to $n = 1$ (d) $n = 2$ to $n = 3$
- 178) A basketball is thrown upward along a parabolic path. What is the balls acceleration wh8ile moving upward?
(a) $0g$ upward (b) $1/2 g$, upward
(c) g , upward (d) g , downward
- 179) A steam turbine is used to drive a generator. This input power to the turbine is P_1 and the output power is P_0 . The power loss in the turbine is P_L as shown below
.....
(a) (b) (c) (d)
- 180) Aqueous solution of KBr was added to the aqueous solution of $MgBr_2$. Due to common Br equilibrium is disturbed, To reach the state fo new equilibrium which reaction will occur?
(a) (b) (c) Both are possible
(d) Common ion effect is not applicable to this system
- 181) The geometrical statement "a coincides with b or lies to the left of b" is expressed as
(a) $a < b$ (b) $a > b$ (c) $a \leq b$ (d) $a \geq b$



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182) The shortest distance of line $ax + by + c = 0$ from origin is

- (a) $\frac{|ax, +by, +c|}{\sqrt{a^2 + b^2}}$ (b) $\frac{|ax, +by, +c|}{\sqrt{x^2 + y^2}}$
(c) $\frac{|c|}{\sqrt{a^2 + b^2}}$ (d) $\sqrt{a^2 + b^2}$

183) The equation of the ellipse whose foci are $[\pm 2, 0]$ and eccentricity $\frac{1}{2}$ is

- (a) $\frac{x^2}{12} + \frac{y^2}{16} = 1$ (b) $\frac{x^2}{16} + \frac{y^2}{12} = 1$
(c) $\frac{x^2}{16} + \frac{y^2}{6} = 1$ (d) $\frac{x^2}{12} - \frac{y^2}{16} = 1$

184) A piston in a gas supply pump has an area of 500cm^2 and it moves a distance of 30cm during one stroke.

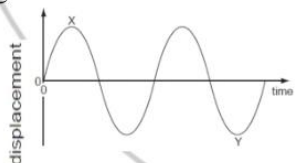
The pump moves the gas against a fixed pressure of 4000Pa . the work done by the piston during one stroke is

- (a) 60J (b) 6.0×10^3 (c) $6.0 \times 10^5\text{J}$ (d) 6.0×10^7

185) Atmospheric pressure is measured by

- (a) Hygrometer (b) Barometer
(c) Pyrometer (d) Spherometer

186) A displacement time graph for a transverse wave is shown in the diagram.



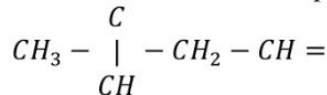
The phase difference between X and Y can be expressed as $n\pi$. What is the value of n ?

- (a) 1.5 (b) 2.5 (c) 3.0 (d) 6.0

187) Choose the mineral considered as macronutrient and is essential for human life.

- (a) iodine (b) iron (c) zinc (d) calcium

188) The IUPAC name of the compound



$\text{CH} = \text{CH}_3$ is

- (a) 2 - methyl - 4 - hexane
(b) 4 - isopropyl - 2 - butane
(c) 5 - methyl - 2 - hexane
(d) 5.5 - dimethyl - 2 - penten

189) Which reaction do you think has highest value of K_c ?

- (a) $\text{H}_2 + \text{I}_2 \leftrightarrow 2\text{HI}$ (b) Ester + water = acid + alcohol
(c) $\text{Cl} + \text{Cl} \leftrightarrow \text{Cl}_2$
(d) $\text{C} + 2\text{H}_2 \leftrightarrow \text{CH}_4$

190) English

191) If $y=f(x,y)$ is a function of two variables x and y then f_y will be

- (a) $\lim_{\Delta x \rightarrow 0} \frac{f(x+\Delta x, y) - f(x, y)}{\Delta x}$
(b) $\lim_{\Delta x \rightarrow 0} \frac{f(x+\Delta x) - f(x, y)}{\Delta x}$
(c) $\lim_{\Delta x \rightarrow \infty} \frac{f(x+\Delta x, y) - f(x, y)}{\Delta x}$
(d) $\lim_{\Delta x \rightarrow 0} \frac{f(x, y+\Delta y) - f(x, y)}{\Delta x}$

192) Chemistry

193) In what way do the atoms of the isotopes $^{12}_6\text{C}$, $^{13}_6\text{C}$, and $^{14}_6\text{C}$ differ?

- (a) Different charge
(b) Different number of electrons
(c) Different number of neutrons
(d) Different number of protons

194) A body of mass 1kg is suspended from a balance in the elevator which is accelerated downward with an acceleration of 4m/s^2 . The reaction balance will be

- (a) 9.8N (b) 13.2N (c) 5.8N (d) zero



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195) Work function for a certain surface is 13.25eV, Minimum frequency light must have in order to eject electron from surface will be

- (a) 1.6×10^{11} Hz (b) 3.2×10^{15} Hz
(c) 4.8×10^{16} Hz (d) 6.4×10^{21} Hz

196) When light of energy 10eV falls on a metal surface of work function 8×10^{15} J, the maximum kinetic energy of emitted electrons will be

- (a) 5eV (b) 10eV (c) 15eV (d) 20eV

197) L mole of an ideal gas is allowed to expand from 20dm^3 to dm^3 against external pressure so the work done is equal to

- (a) 30 atm dm^3 (b) 2500 atm dm^3

(b)(c) 18 atm dm^3 (d) 500 atm dm^3

198) Compound with a greater number of hydrogen bonding is

- (a) CH_3OH (b) H_2O (c) HF (d) H_2SO_4

199) Chemistry

200) English

1.	
2.	
3.	
4.	C
5.	B
6.	
7.	
8.	D
9.	
10.	
11.	C
12.	B
13.	A
14.	B
15.	B
16.	C

17.	D
18.	B
19.	
20.	
21.	
22.	B
23.	D
24.	C
25.	C
26.	d
27.	B
28.	B
29.	B
30.	
31.	
32.	B

33.	
34.	B
35.	D
36.	D
37.	C
38.	A
39.	B
40.	D
41.	
42.	B
43.	
44.	A
45.	
46.	
47.	B
48.	B

49.	B
50.	B
51.	A
52.	
53.	C
54.	
55.	
56.	
57.	
58.	B
59.	
60.	C
61.	
62.	
63.	A
64.	D

65.	D
66.	D
67.	C
68.	D
69.	
70.	B
71.	D
72.	C
73.	A
74.	
75.	D
76.	A
77.	
78.	B
79.	
80.	

81.	
82.	C
83.	C
84.	C
85.	B
86.	A
87.	
88.	B
89.	B
90.	A
91.	A
92.	C
93.	D
94.	B
95.	C
96.	



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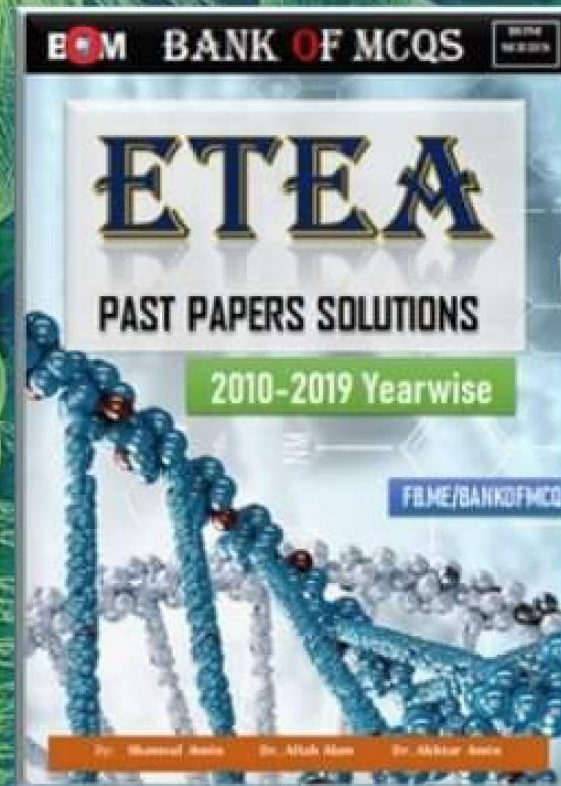
97.		115.		133.	B	151.		169.		187.	
98.		116.	C	134.	A	152.	A	170.		188.	C
99.	B	117.	B	135.		153.		171.		189.	C
100.	C	118.	D	136.		154.		172.	B	190.	
101.	B	119.		137.		155.		173.	C	191.	
102.	B	120.	B	138.		156.		174.		192.	
103.	C	121.		139.	C	157.	A	175.		193.	C
104.	B	122.		140.	A	158.	A	176.		194.	C
105.	A	123.		141.		159.		177.		195.	B
106.	A	124.		142.		160.	A	178.	D	196.	A
107.	A	125.		143.		161.	C	179.		197.	C
108.	C	126.	C	144.	B	162.		180.	D	198.	
109.	A	127.	A	145.	D	163.	A	181.		199.	
110.		128.	C	146.		164.	C	182.		200.	
111.		129.	B	147.	D	165.	d	183.			
112.		130.		148.	C	166.		184.	A		
113.		131.		149.		167.	B	185.	B		
114.		132.	A	150.	A	168.		186.	A		

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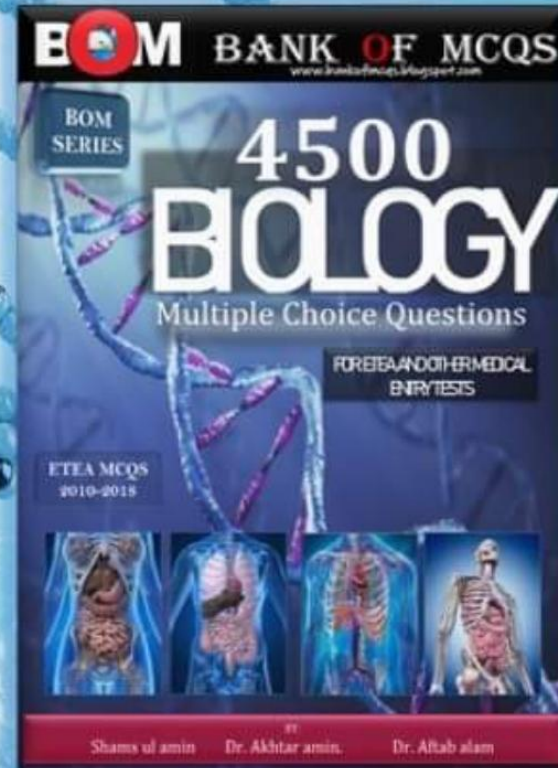
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3. original papers
4. with key
5. yearwise



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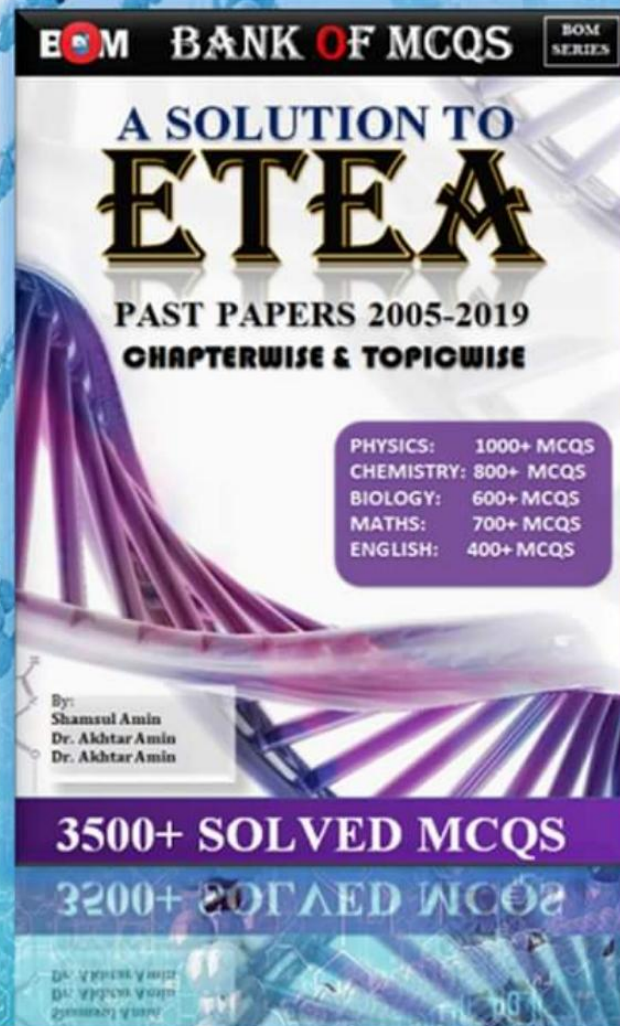
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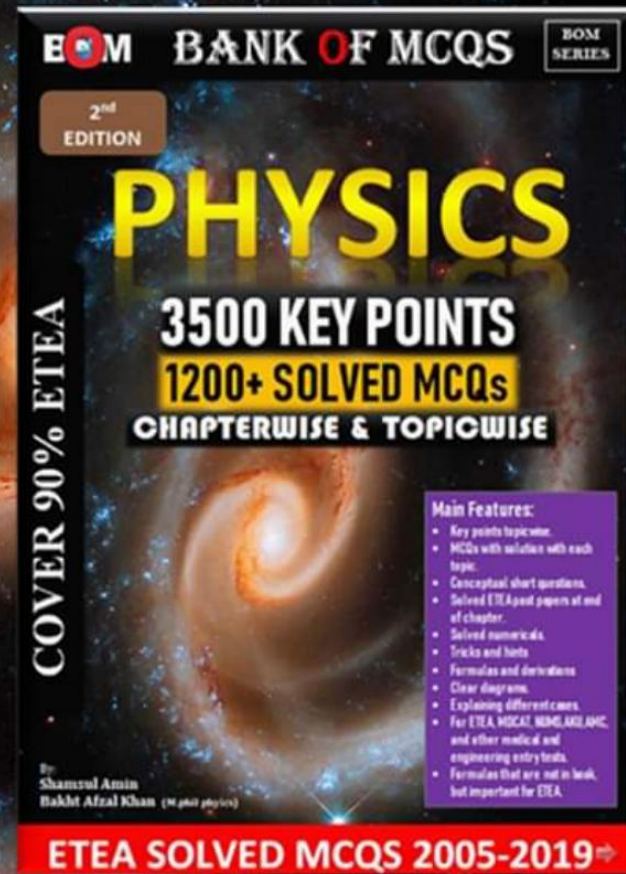
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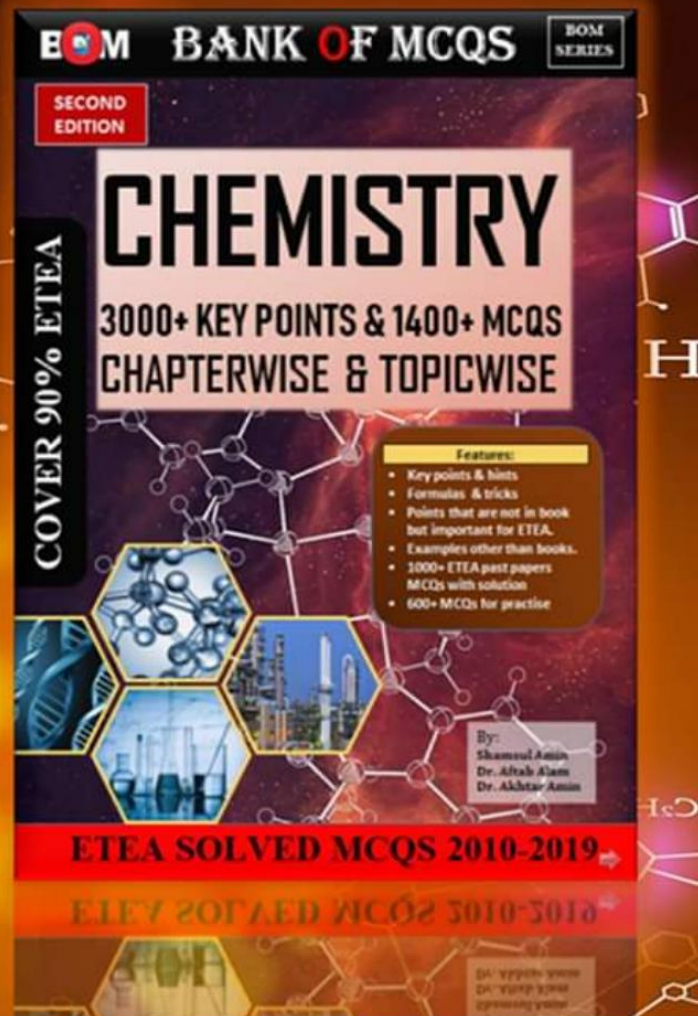
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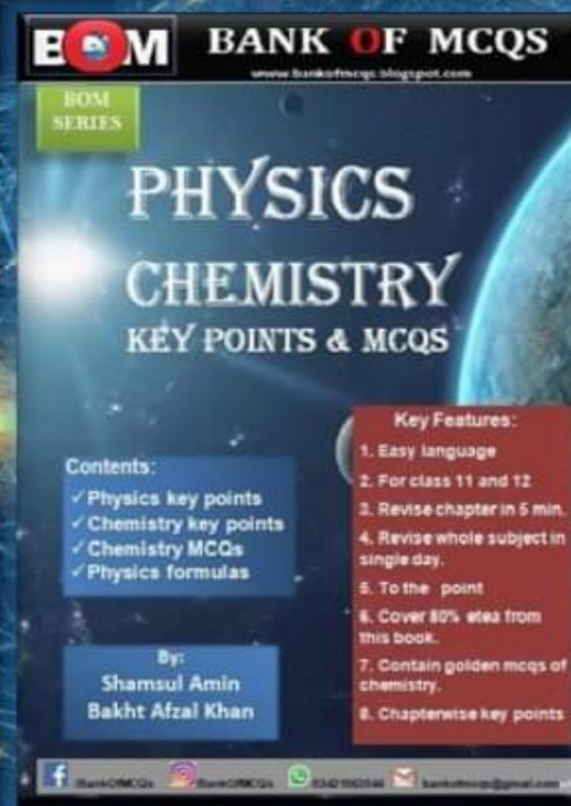
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Key Features:

1. Easy language
2. For class 11 and 12
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4. Revise whole subject in single day.
5. To the point
6. Cover 80% ETEA from this book.
7. Golden MCQs of chemistry.
8. Chapterwise key points





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d) Small size vector with no origin of replication

Hint: When origin of replication is missing bacteria cannot increase the number of its plasmid copies.

45. If one of the following component is missing bacteria can not increase the number of its plasmid copies ?

- a) Antibiotic resistant gene
- b) Origin of replication
- c) Cloning site
- d) Ligases enzymes

Hint: When origin of replication is missing bacteria cannot increase the number of its plasmid copies.

46. Identify in which of the following the genetic information is catalyzed using reverse transcriptase ?

- a) Protein → DNA
- b) RNA → DNA
- c) DNA → RNA
- d) RNA → Protein

Hint: RNA is converted to DNA by reverse transcriptase.

47. What will happen if a vector (plasmid) is cut with a different restriction enzyme which cuts the external DNA to be incorporated in the vector (plasmid) ?

- a) Ligation
- b) No ligation
- c) Tight ligation

d) Cloning

Hint: No ligation will happen if a vector (plasmid) is cut with a different restriction enzyme which cuts the external DNA to be incorporated in the vector (plasmid).

48. If the primer annealing temperature is increased to 94°C. What will happen?

- a) Annealing
- b) Extension
- c) No annealing
- d) Primer-dimer formation

Hint: If the primer annealing temperature is increased to 94°C No annealing will occur because annealing process need 54°C to 2 minute.

49. For the location/detection of a gene in a DNA library which of the following is used?

- a) Primer
- b) Probe
- c) Restriction enzyme
- d) Taq polymerase

Hint: Probe is used for the location and detection of a gene in a DNA library.

50. Under UV illumination , DNA bands are seen in agarose due to which of the following ?

- a) Agarose
- b) Charge of DNA
- c) Fluorescent dye
- d) Radioactive dye



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Hint: Under UV illuminator DNA bands are seen in agarose gel due to fluorescent dye.

51. For callus formation, auxin and cytokinin are required in which ratio?
- (a) Balanced
 - (b) Only Cytokinin required
 - (c) Low Auxin: very high cytokinin
 - (d) Only auxin

Hint: A balance of both Auxin and cytokinin will often produce an unorganized mass of cells, the callus.

52. For which purpose myeloma cells (cancerous B-lymphocytes) are used in the production of monoclonal antibodies?
- (a) Increased rate of cell division
 - (b) Immunization with antigen
 - (c) To avoid contamination
 - (d) As nutrient in media

Hint: Monoclonal antibodies are typically made by fusing myeloma cells (cancerous B-lymphocytes) with the spleen cells from a mouse that has been immunized with the desired antigen.

53. Which of the following vaccine has least side effects?
- (a) Attenuated vaccine
 - (b) Killed vaccine
 - (c) Subunit vaccine
 - (d) Toxoid vaccine

Hint: Killed vaccine has least side effect.

54. Approximately how much calories of free energy is stored in plant biomass for every mole of C_0_2 fixed during photosynthesis?
- (a) 110 (b) 112
 - (c) 114 (d) 116

55. The largest number of molecules are present in the:
- a. 22g of CO_2 b. 64g of O_2
 - c. 14g of N_2 c. 90g of H_2SO_4

Hint: 64g of O_2 contains max no of moles hence H will contain max molecules.

56. Choose the correct arrangement of the various regions of the electromagnetic spectrum in terms of wave lengths.
- a) $Ir > uv > visible > microwave > radio frequency$
 - b) $Microwave > Ir > uv > visible >> radio frequency$
 - c) $Radio frequency > microwave > Ir > visible > uv$
 - d) $Visible > Ir > uv > microwave > radiowave$

57. The bond energy of a H_2 molecule $H_2 \rightarrow 2H$ is:
- (a) 436 KJ/mol (b) 40.7 KJ/mol
 - (c) 272 KJ/mol (d) $436 \div \text{Avogadro's no}$ KJ/mol



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- (a) $\text{ROH} > \text{H}_2\text{O} > \text{C}_6\text{H}_5\text{OH} > \text{RCOOH}$
- (b) $\text{C}_6\text{H}_5\text{OH} > \text{H}_2\text{O} > \text{ROH} > \text{RCOOH}$
- (c) $\text{RCOOH} > \text{C}_6\text{H}_5\text{OH} > \text{H}_2 > \text{ROH}$
- (d) $\text{RCOOH} > \text{ROH} > \text{C}_6\text{H}_5\text{OH} > \text{H}_2\text{O}$

Hint: $K_a \propto$ strength of acid.

67. 10.0dm^3 gas cylinder containing mixture of various gases 50cm^3 of nitrogen gas is in the mixture what is the concentration of N_2 gas in part per billion (ppb):

- (a) $\frac{50}{1000} \times 10^9$
- (b) $\frac{50}{10000} \times 10^9$
- (c) $\frac{50}{100000} \times 10^6$
- (d) $\frac{50}{1000} \times 10^6$

68. Colloidal particles can be separated by using:

- a) Ordinary filter paper
- b) Coarse filter paper
- c) Fine filter paper
- d) Extremely fine filter paper

69. Choose the incorrect statement about corrosion.

- (a) Corrosion cannot be eliminated completely.
- (b) Employing modern techniques corrosion can be completely eliminates.
- (c) Corrosion process can be slowed down by certain methods.
- (d) The presence of acidic oxide in the environment can accelerate the process of corrosion.

70. What is the product when chlorine gas is passed over element silicon in powdered state on heated it produce colorless liquid having formula?

- a) SiCl_2
- b) SiCl_4
- c) SiCl_5
- d) SiCl

Hint: reaction with chlorine

71. The compound with purely acidic is:

- a) $\text{Mg}(\text{OH})_2$
- b) $\text{Al}(\text{OH})_3$
- c) $\text{Si}(\text{OH})_4$
- d) None of the above

72. Chlorine gas dissolve in water to some extent to give:

- (a) Yellow colored solution
- (b) Greenish colored solution
- (c) Bluish colored solution
- (d) Colorless solution

73. Phosphorus (white) catches fire in air and burns with the formation of white smoke the product formed is:

- (a) Phosphorus (iii) oxide
- (b) Phosphorus (v) oxide
- (c) Phosphorus (ii) oxide
- (d) Both (a) & (b)

74. Compound resistant to thermal decomposition is:

- (a) Li_2CO_3
- (b) NaNO_3



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rebounds with the same speed the force exerted on the wall is 2×10^4 the time of contact is:

(a) 1/50 sec (b) 1/25sec

(c) 1/60sec (d) None of these

123. A person, travelling on a motorway a total distance of 200km, travels the first 90km at a average speed must be obtained for the rest of the journey if the person is to reach the destination in a total time of 2 hours 0 minutes?

(a) 110 km h⁻¹ (b) 120 km h⁻¹

(c) 122 km h⁻¹ (d) 126 km h⁻¹

124. A man walks for some time with velocity v due east. Then he walks for same time with velocity v due north. The average velocity for the man is:

(a) $2v$ (b) $\sqrt{2}v$

(c) v (d) $\frac{v}{\sqrt{2}}$

125. A boy walks for some time with velocity v due east. Then he walks for same time with velocity v due north. The average velocity for the man is:

(a) 2.5 (b) 2.4

(c) 5 (d) 2.3

126. An object of mass " m " travelling with speed " v " has a head-on collision with another object of mass " m " travelling with speed " v " in the opposite direction. The two objects stick together after the collision. What is the total loss of kinetic energy in the collision.

(a) 0 (b) $\frac{1}{2}mv^2$

(c) mv^2 (d) $2mv^2$

Hint: if the masses of two bodies are same and their velocities are also same and they are moving in opposite direction then this means head on inelastic collision takes place and in inelastic collision K.E is not conserved so both will lose their K.E and total loss will be $= \frac{1}{2}mv^2 + \frac{1}{2}mv^2 = mv^2$

127. The range of projectile is the same for two angles which are mutually

(a) Perpendicular (b)

Supplementary

(c) Complementary (d) 270°

128. A projectile is projected with a kinetic energy K , range is R it will have minimum kinetic energy after covering a horizontal distance equal to.

(a) $2.25R$ (b) $0.5R$

(c) $0.75R$ (d) R

129. An engine pumps out 40 Kg of water in one second. The water comes out vertically upwards with a velocity of 3ms^{-1} , the power of engine in kilowatt is:

(a) 1.2 kw (b) 12 kw

(c) 120 kw (d) 1200 kw

130. Two boys weighing in the ratio 4:5 goes up stair taking time in the ratio 5:4. The ratio of their power is:

(a) 1 (b) 16/25

(c) 25/16 (d) 4/5

131. The energy stored in the spring of watch is:



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- (a) Kinetic energy (b) Electric energy
(c) Elastic potential energy (d) Solar energy
- 132.** A circular disc of mass M and radius R is rotating about its axis with uniform speed v its kinetic energy is:
(a) Mv^2 (b) $\frac{1}{2} MV^2$
(c) $\frac{1}{4} Mv^2$ (d) $\frac{1}{8} Mv^2$
- 133.** Moment of inertia of an object does not depend upon:
(a) Mass of object (b) Mass distribution
(c) Angular Velocity (d) Axis of rotation
- 134.** A body of mass 10Kg is hanging from a spring balance inside a lift. If the lift falls with an acceleration 10ms^{-2} , then what will be the reading of spring balance:
(a) Zero (b) 2.5 Kg
(c) 5 Kg (d) 10 Kg
- 135.** A metal sphere of radius r is dropped into a tank of water. As it sinks at speed v , it experiences a drag force F given by $F = k r v$, where k is a constant. What are the SI base units of k ?
a) $\text{Kg m}^2 \text{s}^{-1}$
b) $\text{Kg m}^2 \text{s}^{-2}$
c) $\text{Kg m}^1 \text{s}^{-1}$
d) Kg m s^{-2}
- 136.** A parachutist is falling at constant (terminal) velocity, which statement is not correct?
(a) Gravitational potential energy is covered into kinetic energy of the air.
(b) Gravitational potential energy is covered into kinetic of the parachutist.
(c) Gravitational potential energy is converted into thermal energy of the air.
(d) Gravitational potential energy is converted into thermal energy of the parachutist.
- 137.** Eight drops of water, each radius 2 mm are falling through air at a terminal velocity of 8cm s^{-1} . If they coalesce to form a single drop, the terminal velocity of the combined drop will be:
(a) 8cms^{-1} (b) 16cms^{-1}
(c) 24cms^{-1} (d) 32cms^{-1}
- 138.** In a stream lined flow, the velocity of the liquid in contact with the containing vessels is:
(a) Zero (b) Minimum but not zero
(c) Large (d) Infinite
- 139.** Two bodies are dropped from different heights h_1 and h_2 . The ratio of the times taken by them to reach the ground will be
(a) $h_2^2 : h_1^2$ (b) $h_1 : h_2$
(c) $\sqrt{h_1} : \sqrt{h_2}$ (d) None of them
- 140.** The frequency of a seconds pendulum is:
(a) 1Hz (b) 2 Hz
(c) 5 Hz (d) None of above
- 141.** The time period of a simple pendulum is 2 seconds. If its length is



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- (d) Under isobaric conditions
- 151.** A tuning fork produces 4 beats/second with another tuning fork of frequency 280 Hz. When the first is loaded with a little wax the beat frequency changes to 2. The frequency of the first fork before loading is:
(a) 292 Hz (b) 284 Hz
(c) 290 Hz (d) 288 Hz
- 152.** Standing waves are produced in 10 m long stretched string. If the string vibrates in 5 segments and wave velocity is 20 m s^{-1} . Its frequency is:
(a) 2 Hz (b) 4 Hz
(c) 5 Hz (d) 10 Hz
- 153.** In Young's double slit experiment with sodium light, the slits are 0.589 m apart. What is the angular width of the third maximum given $\lambda = 589 \text{ nm}$
(a) $\sin^{-1}(3 \times 10^{-6})$
(b) $\sin^{-1}(3 \times 10^{-8})$
(c) $\sin^{-1}(0.33 \times 10^{-6})$
(d) $\sin^{-1}(0.33 \times 10^{-8})$
- 154.** Monochromatic green light of wavelength $5 \times 10^{-7} \text{ m}$ illuminates a pair of slits 1 mm apart. The separation of bright lines on the interference pattern formed on a screen 2 m away is:
(a) 0.25 mm (b) 0.1 mm
(c) 1.0 mm (d) 0.01 mm
- 155.** Light of wavelength $500 \times 10^{-9} \text{ m}$ falls normally on a plane diffraction grating having 8×10^3 lines per cm.
- The minimum number of images seen is:
(a) 3 (b) 4 (c) 5 (d) 1
- 156.** The refractive index is equal to the tangent of the angle of polarization. It is called:
(a) Brewster's Law
(b) Malus's Law
(c) Bragg's Law
(d) Grimaldi's Law
- 157.** Which of the following cannot be polarized?
(a) Radio waves
(b) Ultraviolet rays
(c) X-rays
(d) Ultrasonic waves
- 158.** A Carnot engine working between 200 K and 400 K has a work output of 600 J per cycle. How much heat energy is supplied to the engine from the source in each cycle.
(a) 1400 J
(b) 1200 J
(c) 1700 J
(d) 1300 J
- 159.** When 10^{12} electrons are received from a neutral metal sphere. The charge on the sphere becomes:
(a) $0.16 \mu\text{C}$ (b) $-0.1 \mu\text{C}$
(c) $0.32 \mu\text{C}$ (d) $-0.32 \mu\text{C}$



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- d. to using his time in a wisely manner
- 179.** he is busy, would you like to leave a message? Said the assistant.
(a) The assistant told that he is busy and asked me to leave a message
(b) The assistant told that he was busy and ask me to leave a message
(c) The assistant told that he was busy and asked be to leave a message
(c) The assistant told that he was busy and asked me to leave a message.
- 180.** Choose the antonym of the word.
(a) Tender (b) Sheepish
(c) Supportable (d) Tremulous
- 181.** Why did your supervisor take such a strong disciplinary action when you were innocent?
(a) Why has such a strong disciplinary action taken by your supervisor when you were innocent ?
(b) Why was such a strong disciplinary action being taken by your supervisor?
(c) Why was such a strong disciplinary action taken by your supervisor when you were innocent?
(d) Why such a strong disciplinary action was taken by your supervisor when you were innocent?
- 182.** That a driver swerves in order to avoid an accident can be proven by examining the marks on the pavements.
(a) Stops quickly
(b) Turns sharply
(c) Hits something else
(d) Goes backward
- 183.** Though Aleem is poor, _____ he is honest.
(a) But (b) Nevertheless
(c) Yet (d) Still
- 184.** Choose the synonym for the word "ABRIDGE".
(a) To make a bridge (b) Shorten
(c) Magnify (d) Divert
- 185.** It is a general perception that doctors have a callous disregard for the feeling of others: (the underlined word nearly means)
(a) Respectable (b) Careful
(c) Unfeeling (d) Sensitive
- 186.** Choose the synonym for the word "ATTENUATE".
(a) Appear (b) Be absent
(c) Weaken (d) Testify
- 187.** The rules forbid passengers to cross the railway line.
(a) Passengers were forbidden by the rules to cross the railway line
(b) Passengers are being forbidden by the rules to cross the railway line
(c) Passengers are forbidden by the rules to cross the railway line
(d) Passengers are forbidden by the rules to cross the railway line
- 188.** A thirsty buyer purchases fruits and vegetables in season. (The underlined word nearly means)
(a) Careful (b) Professional



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moving with angular speed ω . If the angular speed is tripled then the magnitude of centripetal force becomes;

- (a) 8F (b) 9F (c) 3F (d) 4F

HINT: $F_c = -m\omega^2 r$

$$F_c \propto \omega^2$$

$$F_c \propto (3)^2 \omega^2$$

$$F_c \propto 9 \omega^2$$

Answer: (b) Page No: 121

19. If sphere is rolling the ratio of its rotational energy to total energy is given by:

- (a) 7:10 (b) 2:5 (c) 10:7
(d) 2:7

ANSWER: (b) Page No: 124

20. A ring and a disc have same mass and same radius. If we denote the moment of inertia of disc by I_d and that of ring by I_r then:

- (a) $I_r > I_d$ (b) $I_r < I_d$ (c) $I_r = I_d$

ANSWER: (B) Page No: 123,124

21. The angular momentum of a wheel change from 2L to 5L in 3 seconds. The magnitude of the torque acting on it is:

- (a) $\frac{L}{5}$ (b) $\frac{L}{3}$ (c) $\frac{L}{2}$ (d) L

HINT: $T = \frac{\Delta L}{\Delta t} = \frac{5L - 2L}{3} = \frac{3L}{3} = L$

ANSWER: (d) Page No: 125

22. If a gymnast sitting on a rotating stool with his arms outstretched suddenly lowers his hands:

- (a) The angular velocity decreases

- (b) His moment of velocity decreases

- (c) The angular velocity stays constant

- (d) The angular momentum increase

HINT: $L = I\omega \Rightarrow I \propto 1/\omega$

When lower his hands I decreases in order to keep.

ANSWER: (a) Page No: 125

23. The orbital velocity 'v' and the radius 'r' of the satellite are related by

- (a) $v \propto r$ (b) $v \propto \frac{1}{r^2}$ (c) $v \propto \frac{1}{r}$ (d) $v \propto \frac{1}{\sqrt{r}}$

HINT: $U \propto 1/\sqrt{r}$

ANSWER: (d) Page No: 133

24. A fireman wants to slide down a rope. The breaking strength for the rope is $\frac{3}{4}$ of the weight of the man with what minimum acceleration should the fireman slide down

- (a) $\frac{1}{2}g$ (b) $\frac{1}{4}g$ (c) $\frac{3}{4}g$ (d)

Zero

ANSWER: (a) Page No: 135

25. A man of mass 90 kg is standing in an elevator whose cable broke suddenly, if the elevator falls freely, the force exerted by the floor on the man is :

- (a) Zero (b) $90 \times 9.8N$ (c) $90N$ (d) $-90N$

ANSWER: (b) Page No: 136



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(d) Both (a) & (b) are correct

ANSWER: (b) Page No: 269

34. There are two charges each of $5\mu\text{c}$ the ratio of the force acting on them will be

(a) 1:25 (b) 1:5 (c) 1:1 (d) 5:1

ANSWER: (c) Page No: 5

35. In the M.K.S system of units ϵ_0 equal

(a) $\frac{1\text{c}^2}{\text{N}\cdot\text{m}^2}$ (b) $9\times 10^9 \text{Nm}^2/\text{C}^2$

(c) $\frac{1}{4\pi\times 9\times 10^9}\left(\frac{\text{c}^2}{\text{Nm}^2}\right)$ (d)

$\frac{1}{9\times 10}\frac{\text{c}^2}{\text{Nm}^2}$

ANSWER: (c) Page No: 5

36. Charge is distributed uniformly on the surfaced of large flat plate the electrical held 2cm from the plate is $30\frac{\text{N}}{\text{c}}$ what is the electrical field at 4cm from the plate.

(a) $120\frac{\text{N}}{\text{c}}$ (b) $30\frac{\text{N}}{\text{c}}$
(c) $15\frac{\text{N}}{\text{c}}$ (d) $7.5\frac{\text{N}}{\text{c}}$

HINT: Electric filed of uniform charge plate is independent distance.

ANSWER: (b) Page No: 27 (Sub topic: 11.5.1.3)

37. Two identical capacitor each with capacitance C, are connected in parallel and the combination is connected in series to a third identical capacitor. The equivalent capacitance of this arrangement is

(a) $\frac{2\text{c}}{3}$ (b) c (c) 2c (d) 3c

ANSWER: (a) Page No: 42 (Sub Topic: 11.10.3)

38. A student kept her 60 watt acid 120 volt study lamp turned on from 2:00PM until 2:00AM. How many coulombs of chage went through it?

(a) 3600 (b) 7200
(c) 18000 (d) 21600

HINT: Here P = 60watt V=120

So $I = \frac{60}{120} = 0.5 \text{ A}$

Now t=12 hours = 12 x 3600 sec

ANSWER: (a) Page No: 64

39. There is a current of 3.2 amp in a conductor. The number of electrons that cross any section normal to the direction of flow per second is:

(a) 2×10^{19} (b) 0.2×10^{19}

(c) 20×10^{19} (d) 200×10^{19}

ANSWER: (a) Page No: 4

40. Which statement is not valid?

(a) Current is the speed of the charged particles that carry it.

(b) Electromotive force (*e.m.f*) is the energy converted to electrical energy from other forms per unit charge.

(c) The potential difference (*p.d*) between two points is the work done per unit charge when moving charge from one point to another.

(d) The resistance between two points is the (*p.d.*) between the two points per unit current.

HINT: $V = IR$ where R is constant and it depend on nature dimension and physical state.



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ANSWER: (d) Page No: 68

41. The example of a non-ohmic resistance is
(a) Ge-resistance (b) Carbon resistance

(c) Copper wire (d) Diode

ANSWER: (d) Page No: 69

42. Two copper wires S and T of equal length are connected in parallel. A potential difference is applied across the ends of this parallel arrangement. Wire S has a diameter of 3.0 mm. Wire T has a diameter of 1.5 mm.

What is the value of the ratio

$\frac{\text{current in T}}{\text{current in S}}$?

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 2 (d) 4

ANSWER: (a) Page No: 67

43. The feminine of MILKMAN is:
(a) Milkgirl (b) Milkmaid
(c) Milkwoman (d) Milk lady

ANSWER: (d) Page No: 69

44. Alkali metals like "Rb" & "Cs" catch fire in air and produce superoxide such as:

(a) Rb_2O & Cs_2O (b) RbO_2 & CsO_2

(c) RbO & CsO (d) RbO_2 & Cs_2O

ANSWER: (b) Page No 21 (Sub Topic: 13.2.3.1)

45. Solenoid B has the twice radius and six time the number of turns per unit length as solenoid A. The ratio of the magnetic field in the interior of B to

that in the interior of A is:

(a) 2 (b) 4 (c) 6 (d) 1

ANSWER: (c) Page No: 120

46. What behavior is the copper exhibiting?

(a) Brittle only (b) Elastic only

(c) Plastic only (d) Both (a) & (b)

HINT: Substances which undergo plastic deformation until they break are known as ductile substances, load copper and wrought iron are ductile.

ANSWER: (c) Page No: 249

47. The diode is used as:

(a) A modulator (b) An amplifier
(c) A rectifier (d) An oscillator

HINT: DIODE is used as rectifies,

ANSWER: (c) Page No: 279

48. A photon of frequency f has a momentum associated with it if C is the velocity of light this momentum is:

(a) hf (b) $2hf$ (c) $\frac{hf}{c}$ (d)

$\frac{hf}{c^2}$

ANSWER: (c) Page No:

49. A photon of frequency f has a momentum associated with it if C is the velocity of light this momentum is

(a) hf (b) $2hf$

(c) $\frac{hf}{c}$ (d) $\frac{hf}{c^2}$

ANSWER: (c) Page No: 319

50. The uncertainty in position of an



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electron in a certain state is 5×10^{-10} m the uncertainty in its momentum might be

(a) 5.0×10^{-24} kg. m/s (b) 4.0×10^{-24} kg. m/s

(c) 3.0×10^{-24} kg. m/s (d) 1.5×10^{-24} kg. m/s

ANSWER: (d) Page No: 330

51. When a hydrogen atom makes the transition from the second excited state to the ground state (at -13.6 eV) the energy of the photon emitted is (a) 1.5 eV (b) 9.1 eV (c) 12.1 eV (d) 10.2 eV

HINT: 2nd Excited state means $n = 3$

$$\Delta E = E_3 - E_1 = -1.51 - (-13.6) = 12.1 \text{ eV}$$

ANSWER: (c) Page No: 355

52. Which equation represents β^+ decay?
(a) Neutron \rightarrow proton + positron + antineutrino
(b) Neutron \rightarrow proton + positron + neutrino
(c) Proton \rightarrow proton + neutron + antineutrino
(d) Proton + neutron + positron + neutrino

HINT: In positive β decay $p \rightarrow n + e^+ + \bar{\nu}$

While in $-\beta$ decay.

ANSWER: (d) Page No: 389

53. What is not conserved in nuclear processes?

(a) Charge (b) momentum

(c) The total number of neutrons

(d) The total number of nucleons

HINT: The total no of neutrons are not

conserved.

ANSWER: (c) Page No: 400

54. What is not conserved in nuclear processes?

(a) Charge (b) momentum

(c) The total number of neutrons

(d) The total number of nucleons

HINT: The total no of neutrons are not

conserved.

ANSWER: (c) Page No: 400

55. What is proton?

(a) A hadron

(b) A particle consisting of two down quarks and one up quark

(c) A positive fundamental particle

(d) A positive lepton

HINT: Hydrogen because proton is made up of two up and one down quark and neutron two down and one up.

ANSWER: (a)

56. X-ray photon due to transition from M-shell to the vacancy in the K-shell is called:

(a) $K \alpha$ characteristic of X-ray



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- (a) Operating life for fuel cell is unlimited
- (b) Electrode in fuel cell may be porous solid and may contain catalyst
- (c) The fuel in fuel cell can be gas, liquid, solid or solution
- (d) In fuel cell the cell products cannot be regenerated

HINT: It is reversible reaction

ANSWER: (d) Page No: 346 (Sub Topic: 12.3.4.3)

75. Which elements have the highest 2nd ionization energy?

- (a) Sr
- (b) Li
- (c) Mg
- (d) Ca

HINT: For



Sr, Mg, Ca will have the 1st ionization energy more but Li will have 2nd ionization energy greater.

ANSWER: (b) Page No: 4 (Sub Topic: 13.1.1.3)

76. Which of the following is an ionic oxide?

- (a) Mn_2O_7
- (b) ZnO
- (c) CO
- (d) H_2O_2

HINT: Metallic oxides are ionic oxides, when they are in their lower oxidation state.

ANSWER: (b) Page No: 10 (Sub Topic: 13.1.3)

77. Steam of chlorine is passed over

heated sulphur and form an orange colored foul smelling liquid having formula :

- (a) SCL_2
- (b) S_2Cl_2
- (c) S_2Cl
- (d) Mixture of SCL_2 and S_2Cl_2

ANSWER: (b) Page No: 13.1.2 (Sub Topic: 13.1.2)

78. Magnesium metal burn in air, the product form is

- (a) MgO
- (b) Mg_3N_2
- (c) MgCO_3
- (d) Both (a) and (b)

HINT: Mg reacts with O_2 and N_2 of air, the product form MgO and Mg_3N_2

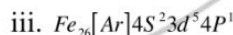
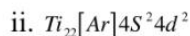
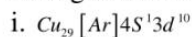
ANSWER: (d) Page No: 26 (Sub Topic: 13.3.3.3)

79. Which of the following is amphoteric in nature;

- (a) MgO
- (b) V_2O_5
- (c) K_2O
- (d) CaO

ANSWER: (b) Page No: 26 (Sub Topic: 13.3.3.1)

80. Which of the following electronic configuration is/are correct?



- (a) I only
- (b) I & ii only
- (c) ii & iii only
- (d) I & iii only

ANSWER: (b) Page No: 51 (Sub Topic: 14.1.4)



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ANSWER: (a) Page No: 278 (Sub Topic: 19.6.4)

96. The carbonyl group of carboxylic acid do not exhibit the characteristics reaction of aldehyde and ketone due to :
- (a) The C of carboxyl is less positive
 - (b) The C of carboxyl is more positive
 - (c) The C of Ketone is less positive
 - (d) Does not depend on C atom

ANSWER: (a) Page No: 297

97. Carboxylic acid react with ammonia to form ammonium salts which on heating produces:
- (a) CO_2
 - (b) Alkane
 - (c) Ester
 - (d) Acetamide

ANSWER: (d) Page No: 302 (Sub Topic: 20.7.1.4)

98.
$$R-\text{COONa} + \text{NaOH} \xrightarrow[\text{heat}]{\text{CaO}} \text{RH} + \text{Na}_2\text{CO}_3$$
The above relation is known as:

- (a) Carboxylation
- (b) Decarboxylation
- (c) Neutralization
- (d) Reduction

ANSWER: (b) Page No: 304 (Sub Topic: 20.7.4)

99. Food article spoiling involves oxidation reduction processes, to prevent this reaction we usually add preservative which act as:
- (a) An oxidizing agent
 - (b) A reducing agent
 - (c) An acid
 - (d) A base

ANSWER: (c) Page No: 305 (Sub Topic: 20.7.4)

100. Solvent dyes are also known as:
- (a) Spirit - soluble dyes
 - (b) Ether - soluble dyes
 - (c) Direct dyes
 - (d) Basic dyes

ANSWER: (a) Page No: 365

101. Light naphtha contain hexane & heptane is obtained in the boiling range of
- (a) 60 - 100⁰ C
 - (b) 80 - 100⁰ C
 - (c) 40 - 60⁰ C
 - (d) 60 - 80⁰ C

ANSWER: (a) Page No: 372

102. Nylon (6,6) six carbon atom in each monomer is the example of:
- (a) Addition polymers
 - (b) Substitution polymers
 - (c) Condensation polymers
 - (d) Condensation monomers

ANSWER: (c) Page No: 374

103. Adipic acid react with dimethylterthalate to form condensation polymer:
- (a) Nylon-6,8
 - (b) Dacron
 - (c) Teflon
 - (d) Bylon-6,6

ANSWER: (a) Page No: 374

104. $\text{CH}_3-\overset{\text{O}}{\parallel}-\text{OONO}_2$ is the formula of:
- (a) PAN
 - (b) Smog
 - (c) Ozone
 - (d) Chlorofluoro carbons

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ANSWER: (a) Page No: 398

105.What is the colour of oxidizing smog:

- (a) Reddish brownish gray
- (b) Bluish brownish gray
- (c) Brownish gray (d) Yellow

HINT: Photochemical smog is also called oxidizing smog.

ANSWER: (a) Page No: 397 (Sub Topic: 23.1.5)

106.Blue baby syndrome is caused due to:

- (a) A phosphate in diets
- (b) Chlorates in diets
- (c) Excessive nitrate in diets
- (d) Deficiency of nitrate

ANSWER: (c) Page No: 409 (Sub Topic: 23.3.1.2)

107.A sample containing copper weighing 10.0g yield 2.0g of copper sulphide. What is the percent of copper (amu Cu = 63.54) in the sample.

- (a) $\frac{2.0 \times 100}{10.0}$
- (b) $\frac{2.0 \times 2 \times 63.54 \times 100}{10 \times 95.60}$
- (c) $\frac{2.0 \times 95.6}{10 \times 2 \times 43.54}$
- (d) $\frac{2.0 \times 63.4 \times 100}{10 \times 95.60}$

ANSWER: (d) Page No: 422

108.Naila has two

- (a) Sister in law (b) Sisters in law
- (c) Sister in law's (d) Sister's in law

ANSWER: (b)

109.The plural of LOUSE is:

- (a) Lices (b) Lice (c) Louses
- (d) Lyces

ANSWER: (b)

110.Which of the following is not an adjective?

- (a) Bravery (b) Intelligent
- (c) Beautiful (d) Honest

ANSWER: (a)

111.The feminine of MILKMAN is:

- (a) Milkgirl (b) Milkmaid
- (c) Milkwoman (d) Milk lady

ANSWER: (b)

112.Katherine made her children _____ chores on Sunday

- (a) make some (b) take some
- (c) do some (d) does some

ANSWER: (c)

113.The synonym for the word "ANIMOSITY" IS:

- (a) Powerful (b) Hatred
- (c) Hatful (d) Quarrelsome

ANSWER: (b)

114.Hussain suffers from no _____ about his capabilities.

- (a) Doubts (b) Hallucinations
- (c) Illusion (d) Imaginations

ANSWER: (c)

115.I always _____ defy any authoritarianism.

- (a) have and always will (b) have and will



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- (c) have defied and always will
- (d) haven't but will

ANSWER: (b)

- 116.** The emperor _____ his kingship and become a hermit.
- (a) abolished (b) abated
 - (c) abdicated (d) abandoned

ANSWER: (d)

- 117.** Choose the correct sentence:
- (a) Brazil is a populous country; the beaches are warm sandy and spotless clean.
 - (b) Brazil is a populous country; the beaches are warm, sandy and spotlessly clean.
 - (c) Brazil is a populous country, the beaches are warm sandy and spotlessly clean
 - (d) Brazil is a populous; country the beaches are warm, sandy and spotlessly clean

ANSWER: (b)

- 118.** The antonym for the word "ACQUIT" is:
- (a) Retreat (b) Convict
 - (c) Conceal (d) Deprive

ANSWER: (b)

- 119.** She said "I passed the examination long ago"
- (a) She said that she had passed the examination long ago

- (b) She said that she had passed the examination long before.
- (c) She told she had passed the examination long before
- (d) She asked that she had passed the examination long ago (b) (c) (d)

ANSWER: (b)

- 120.** To have an old head on young shoulders' means:
- (a) To be wiser than one's age
 - (b) To be young but appear old
 - (c) To have low IQ
 - (d) To be old but appear young

ANSWER: (a)

- 121.** Do not disturb him for nothing.
- (a) Let not he be disturbed for nothing
 - (b) He is not to be disturbed for nothing

(c) Nobody should disturb him for nothing

(d) We should not disturb him for nothing

ANSWER: (a)

- 122.** Cannon had _____ unique qualities _____ it was used widely in ancient times.

(a) such, so (b) that, since

(c) that, that (d) such, that

ANSWER: (d)



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- (a) $ax_1 + by_1 + c = 0, b = 0$
- (b) $ax_1 + by_1 + c > 0, b < 0$
- (c) $ax_1 + by_1 + c > 0, b > 0$
- (d) $ax_1 + by_1 + c < 0, b > 0$

ANSWER: (c)

143. Equation of the tangent to the circle $x^2 + y^2 = a^2$ at point (x_1, y_1) is given by

- (a) $xx_1 - yy_1 = 0$
- (b) $xx_1 + yy_1 = a^2$
- (c) $xx_1 + yy_1 = a$
- (d) $xy_1 + yx_1 = a^2$

ANSWER: (b)

144. In the equation $4px = y^2$, if $p > 0$, then the parabola is symmetric with respect to

- (a) Negative X-axis
- (b) Positive Y-axis
- (c) Positive X-axis
- (d) X-axis

ANSWER: (c)

145. In the horizontal ellipse if foci are $F_1(h - c, k)$ and $F_2(h + c, k)$, then its standard equation is given by

- (a) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
- (b) $\frac{(x-k)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$
- (c) $\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$
- (d) $\frac{(x-c)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$

HINT: $F_1(h - c, k)$ and $F_2(h + c, k)$

In transition case

$$\frac{(x-h)^2}{a^2} + \frac{(y-h)^2}{b^2} = 1$$

ANSWER: (c)

146. In translation of axis

- (a) Direction of axes changing
- (b) Origin is changing
- (c) Both axes and origin are changing
- (d) Axes are changing through some angle

HINT: 2nd year Book Page No. 308

ANSWER: (b)

147. $y = x + A$ is a solution of the D.E

- (a) $dy + dx = 0$
- (b) $\frac{dy}{dx} = 0$
- (c) $\frac{dy}{dx} = 1$
- (d) $\frac{dy}{dx} = C$

ANSWER: (c)

148. If slope of the family of curved $F(x, y, c_1)$ for the equation $x^2 + y^2 = C$ is

- $\left(-\frac{x}{y}\right)$ then slope of the orthogonal Trajectory of the second family $G(x, y, c_2)$ is

- (a) $\frac{x}{y}$
- (b) $-\frac{x}{y}$
- (c) $\frac{y}{x}$
- (d) $\frac{1}{x}$

ANSWER: (c)

149. For $y = x^2 + c$ the equation of orthogonal trajectory is

- (a) $2y = m\left(\frac{c}{\sqrt{x}}\right)$
- (b) $y = m(c\sqrt{x})$
- (c) $y = m\sqrt{x} | c$
- (d) $y = m\left(\frac{\sqrt{x}}{c}\right)$

HINT:

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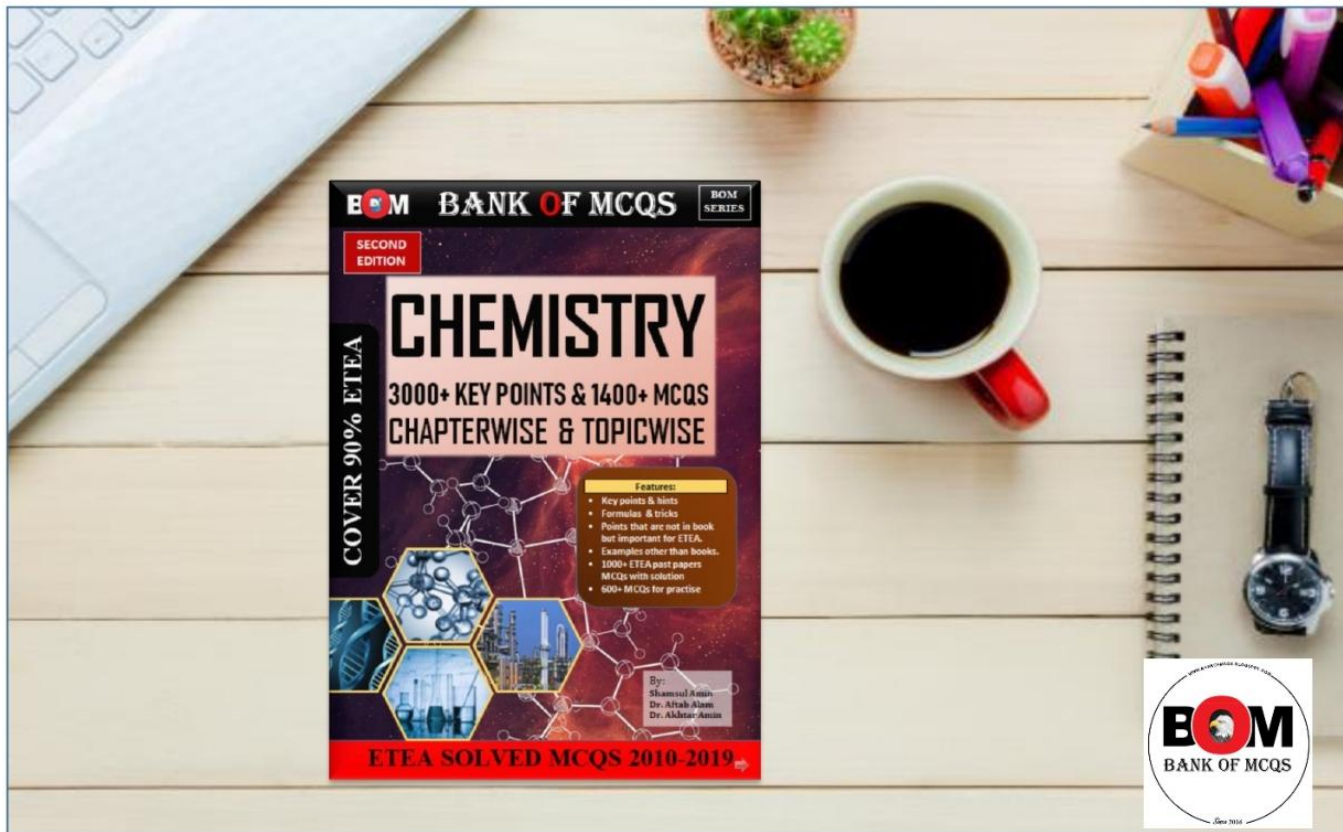
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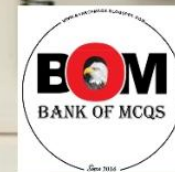
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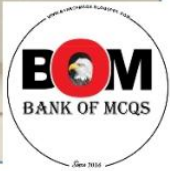
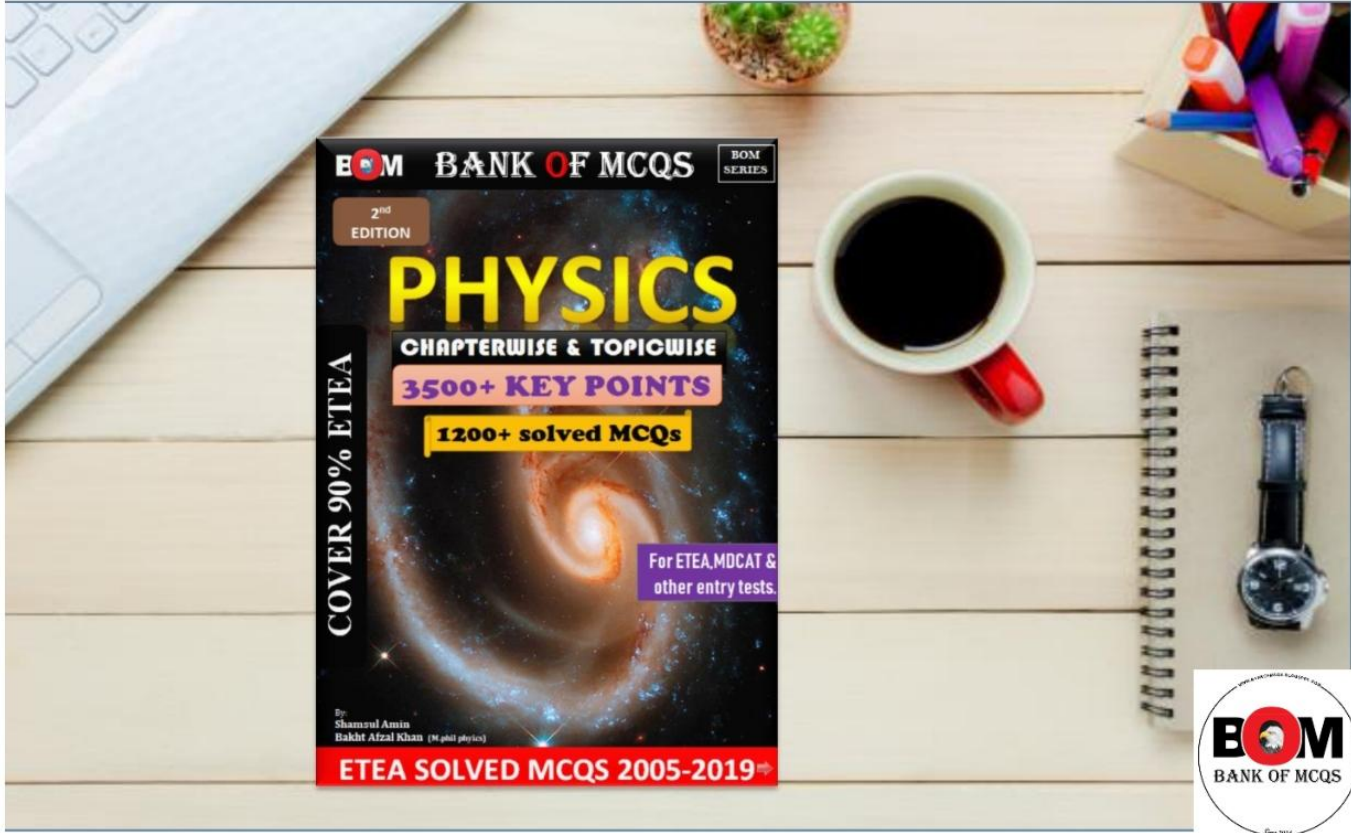
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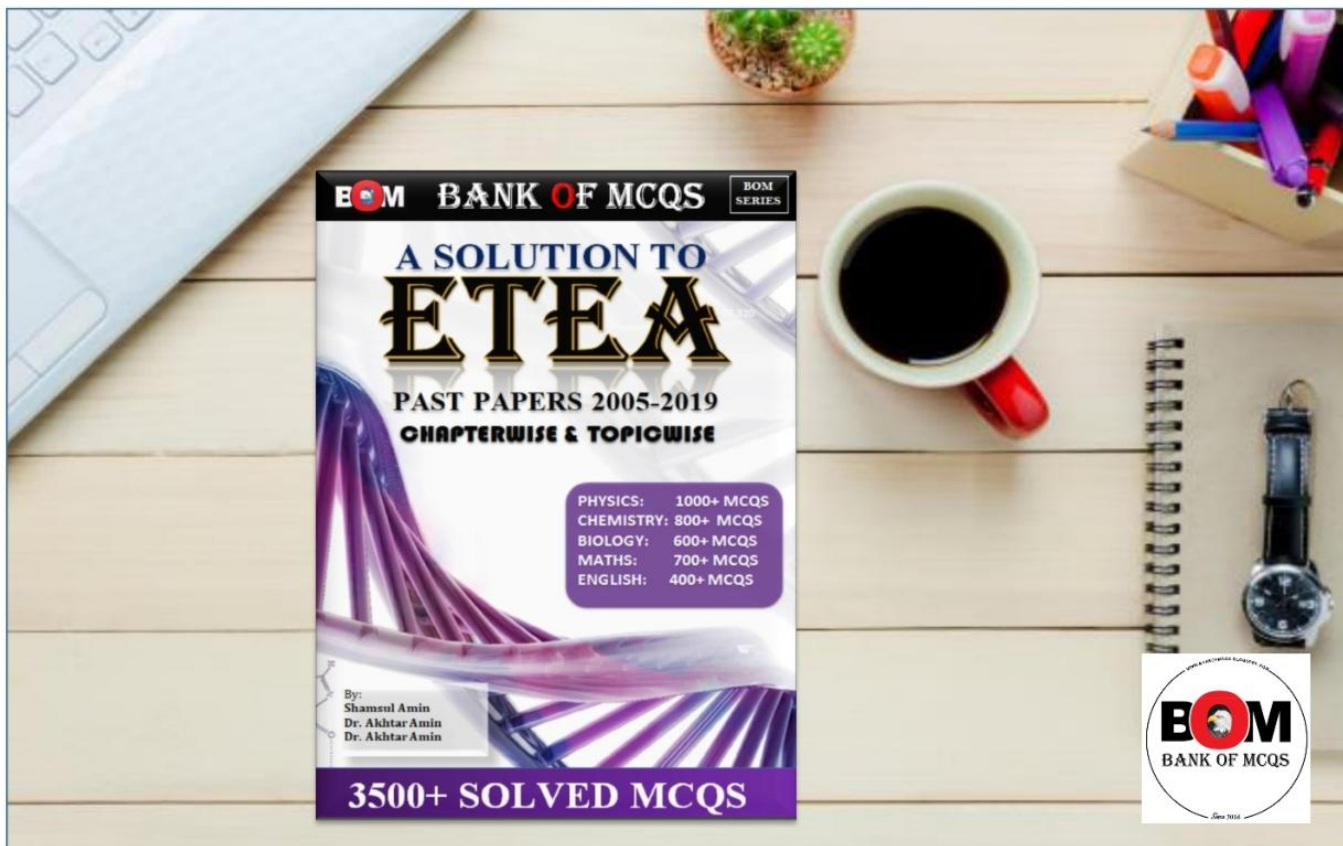
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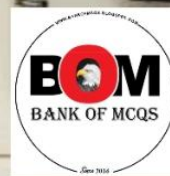
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- b) Blue light
- c) Red light
- d) Yellow light

Hints: b) in discharge tube experiment every gas on ionization gives specific color H_2 (gas) gives blue light glow.

9. Tetramethylsilane (TMS) is added to the compound as standard while carrying out its NMR spectra the TMS is a:

- a) Non volatile compound
- b) Less volatile compound
- c) Highly volatile compound
- d) Highly reactive compound

Hints: c) because of 12H atoms in tetramethylsilane molecule are equitant.

Its H NMR spectrum consist of a singlet.

(its high volatility TMS can easily evaporated.)

10. Salam can readily answer any question about what is going on. [select the correct passive voice]

- a) A question is readily answered on about what is going on.
- b) A bout what is going on, salaam can answer readily the questions.
- c) Salam readily answered about ongoing question.
- d) Any question about what is going on can be readily answer by salaam.

Hints: d)

11. A radioactive substance has a half-life of four months. Three fourth of the substance will decay in.

- a) 6 months

- b) 8 months
- c) 12 months
- d) 16 months

Hints: b) 1 half life = $\frac{t}{2}$ 2 Half life

$$= \frac{t}{4} \quad \text{Total time} = \frac{t}{2} + \frac{t}{4} \\ = \frac{2t+t}{4} = \frac{3t}{4}$$

12. Which two nuclei contain the same number neutrons?

- a) ${}^{12}_6C$ and ${}^{14}_1C$
- b) ${}^{16}_7N$ and ${}^{15}_8O$
- c) ${}^{23}_{11}Na$ and ${}^{24}_{12}mg$
- d) ${}^{32}_{14}Si$ and ${}^{32}_{15}P$

Hints: c)

13. The maximum efficiency of an engine operating between the temperatures $400^{\circ}C$ and $60^{\circ}C$ is :

- a) 50 %
- b) 55 %
- c) 85 %
- d) 95 %

Hints: c)

$$n = 1 - \frac{T_2}{T_1}$$

14. $\frac{(-1)^{n-1} (n-1) a^n}{(ax+b)^n}$ is the n^{th} derivative of

- a) $f(x) = (ax+b)_n$
- b) $f(x) = \ln (ax+b)_n$
- c) $f(x) = \ln (ax+b)_n$
- d) $f(x) = \ln (ax+b)_n$

Hints: a)

15. A homogenous system has non trivial solution, if a is a coefficient matrix, then

- a) $\text{Det}(a) \neq 0$
- b) $\text{Det}(a) = 0$
- c) $\text{Det}(a) < 0$



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Det (a) > 0

Hints: b)

16. IF a is the first term and r is the common ratio of a G. P then $a_5 =$:

a) $a_1 r^5$
b) $a_1 r^4$
c) $a_1 (r-1)$
d) $a_1 r$

Hints: b)

17. Most of the enzymes start showing activities in the range of PH between

a) 2- 4
b) 5- 9
c) 3- 5
d) 10- 12

Hints: b)

18. Hydrolysis of fats occurs in the mouth and stomach to a slight extent because:

a) Very small amount of lipase is secreted by the salivary glands
b) Small amount of lipase is secreted by the salivary glands
c) No lipase is secreted by the salivary glands
d) Large amount of lipase is secreted by the salivary glands

Hints: a)

19. Sulpholipids are class of compounds that bonds fatty acids, alcohols and carbohydrates. It contains a:

a) Sulfhydryl group
b) Sulfhydryl group
c) Sulfate group
d) Bisulfite group

Hints: c)

20. He said to me, have been looking for But haven't found a job :

[Select the correct indirect speech]

a) He told me that he had been looking for work, but hadn't found a job.
b) He told me that he had looked for work, but didn't find a job.
c) He told me that he had been looking for work, but haven't found a job.
d) He told me that he was looking for work, but hadn't found a job.

Hints: a)

21. Thermocouples convert:

a) Chemical into electrical energy
b) Heat into electrical energy
c) Mechanical into electrical energy
d) Light into electrical energy

Hints: c)

22. The kinetic energy and potential energy of a particle executing simple harmonic motion will be equal when displacement is:

(where a is the amplitude)

a) $a\sqrt{\frac{2}{3}}$
b) $\frac{2}{3}a$
c) $\frac{a}{2}$
d) $a\sqrt{2}$

Hints: c)

$$K.E_T = P.F_{\text{max}}$$

$$\frac{K}{2}(a^2 - x^2) = \frac{K}{2}x^2 \quad x = \frac{a}{\sqrt{2}}$$

23. In a stationary wave the distance between consecutive antinodes is 25 cm. If the wave velocity is 300 ms⁻¹ then the frequency of the wave will be:

a) 150 Hz
b) 300 Hz
c) 600 Hz



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- c) 30A
d) Zero
Hints: a)
 $I = \frac{Q}{t}$
 $Q = It$

33. An electron enters a magnetic field acting vertically downwards with velocity v from east. The electron is deflected along.

- a) North
b) South
c) East
d) West

Hints: a)

34. $\frac{\pm\sqrt{1-\cos 2\alpha}}{2} =$

- a) $-\sin \alpha$
b) $\cos \alpha$
c) $\sin \alpha$
d) $-\cos \alpha$

Hints: c)

35. For the parabola $y^2 = -4ax$ ends of the latusrectum are:

- a) $(-a, 2a), (-a, -2a)$
b) $(a, 2a), (a, -2a)$
c) $(2a, a), (-2a, a)$
d) $(2a, 2a), (-2a, -2a)$

Hints: c)

36. Slope of the tangent to the circle $x^2 + y^2 = 2$, which makes an angle 30° with x-axis is equal to:

- a) 0
b) -1
c) $\frac{1}{\sqrt{3}}$
d) Undefined

Hints: c)

37. Choose the correct reaction?

- a) $(\text{CH}_3\text{CO})_2\text{O} + \text{NH}_3 \rightarrow \text{CH}_3\text{C}\text{NH}_2 + \text{CH}_3\text{COOH}$

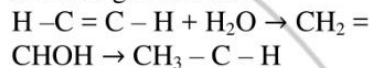
- b) $(\text{CH}_3\text{CO})_2 + \text{NH}_3 \rightarrow (\text{CH}_3\text{CO})_2\text{NH} + \text{H}_2\text{O}$

- c) $(\text{CH}_3\text{CO})_2\text{O} + 2\text{NH}_3 \rightarrow 2\text{CH}_3\text{C}\text{NH}_2 + \text{H}_2\text{O}$

- d) $(\text{CH}_3\text{CO})_2\text{O} + 2\text{NH}_3 \rightarrow 2\text{CH}_3\text{CH}_2\text{NH}_2 + \text{H}_2\text{O}$

Hints: a)

38. What is the suitable catalyst for the reaction given below?



- a) Zn, HCL
b) Li AL H₄
c) HgSO₄/H₂SO₄
d) AL₂O₃

Hints: c) for hydration reaction catalyst always used will be HgSO₄/H₂SO₄.

39. Which one is Hydrazine?

- a) NH₂OH
b) R₂NH
c) C₆H₅HNNH₂
d) H₂NNH₂

Hints: d) NH₂ - NH₂ (hydrazine)

40. Each occupation has its own -----; bankers, lawyers and computer professionals, for example, all use among themselves language which outsiders have difficulty following.

- a) Merits
b) Disadvantages
c) Rewards
d) Jargon

Hints: d)

41. A long solenoid has magnetic field strength 3.14×10^{-3} T inside it when a current of 5A passes through it. The number of turns in 1 m of the solenoid is:



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- a) 1000
- b) 3000
- c) 5000
- d) 10000

Hints: c)

$$B = \mu_0 n I$$

$$B = \mu_0 \frac{N}{l} I$$

$$N = \frac{B l}{\mu_0 I}$$

42. The fringe width in young's double slit experiment increases when?

- a) Wavelength increases
- b) Distance between the source and slit decreases
- c) Distance between the slits increases
- d) The width of the slits increases

Hints: a)

$$F.W = \frac{\lambda D}{d}$$

43. Which of the following properties of an electron is made use of in the electron microscope?

- a) High velocity
- b) Wave nature
- c) Interference
- d) Diffraction

Hints: b)

44. $a_n = \frac{2n}{n+1}$ is the general term of:

- a) 1,2,3,4.....
- b) 1,4/3,6/4,8/5,.....
- c) 1, 1/2, 2/3, 4/5,.....
- d) None of the above

Hints: b)

45. Sum of the series $1, 1/3, 1/9, \dots, 1/3^n$ is:

- a) Zero
- b) 3/2
- c) $1/3^n$

d) $n/3^n$

Hints:b)

46. Two vector \vec{a} and \vec{b} are called collinear if:

- a) $\vec{a} = k\vec{b}$ (for any scalar)
- b) *parallel* to each other
- c) $\vec{a} = \vec{b} = 0$
- d) $\vec{a} \neq kb$

Hints:

47. Alcohols are weakly acidic with ka value in the range of:

- a) 10^{-8} to 10^{-10}
- b) 10^{-10} to 10^{-12}
- c) 10^{-12} to 10^{-15}
- d) 10^{-16} to 10^{-18}

Hints:d) Alcohol weakly acidic because less ka value and more Pka value. Weak will be acid.

48. Choose the correct option of the following?

- a) Ammonia is stronger base than Aliphatic primary amines
- b) Aliphatic primary amines are stronger bases than ammonia
- c) Aliphatic primary amines and ammonia have almost equal basic strength
- d) Aliphatic amines are not basic in nature

Hints:b) NH3 is a weak base which R – NH2 primary amines are more basic than ammonia due to presence of Alkyl group which enhance electronegativity of Nitrogen in turn power for accepting proton in R – NH2 will be greater.

49. Choose the correct IUPAC name of the compound given below?

- a) 2 – Butene



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- b) Cis -2 – Butene
c) Tran 2 – Butene
d) Trans-dimethylethylene
Hints:c) same group on opposite side known as trans isomer.

50. Somebody broke into wur bungalow last Friday.
Select the correct passive voice:
a) Our bungalow was broken into last Friday.
b) Our bungalow was broken in last Friday.
c) Our bungalow is broken in last Friday.
d) Our bungalow was broken by somebody on last Friday.

Hints: c)

51. Magnetic field will not deflect:
a) γ – rays
b) β^{-1} – rays
c) β^{+1} – rays
d) α – rays:
Hints: a)

52. Work function for a certain surface is 3.26 eV. Minimum frequency, light must have in order to ejects election from surface will be:

- a) 1.6×10^{14} Hz
b) 3.2×10^{14} Hz
c) 7.8×10^{14} Hz
d) 6.4×10^{14} Hz

Hints:

$$hf_0 = \phi$$

$$f_0 = \frac{\phi}{h}$$

53. A radioactive substance has a half – life of 60 minutes. During 3 hours the percentage of the material decayed would be:
a) 12.5%

- b) 87.5%
c) 8.5%
d) 25.1%

Hints:

$$\frac{T}{8} \times 100\%$$

54. In equation $2x^2 + 2y^2 + 4x - 6y + 8 = 0$ centre is:

- a) (-2,3)
b) (-ag,-af)
c) (-a/2, -f/2)
d) (2,3)

Hints:

55. S_{∞} of arithomaticgeomatic series is given by:

- a) $a / 1 - r$
b) $a / 1 - r + dr / 1 - r$
c) $a / 1 - r + dr / (1 - r)^2$
d) None of the above

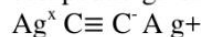
Hints:

56. Total three digit numbers formed from the digits 1,2,3 and 4 if repetition is allowed

- a) 60
b) 64
c) 10
d) 24

Hints:

57. Choose the orrect name of the compound given below.



- a) Silver carbide
b) Alkynide
c) Silver dicharbid
d) None of the above

Hints: a)

58. Select the o/p directing group but ring deactivators of the following ?

- a) – CH₃
b) – Cl



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- c) – NO₂
d) – OH
Hints: b) All the halogens are except (f) are o/p directing group but ring deactivator. Halogens inductive effect is less than resonance effect.
-
59. A solution contains 2 mole of sucrose ***** in 6 mole of water. What is the mole fraction of sucrose?
a) 0.25
b) 0.75
c) 0.5
d) 3.0
Hints:
-
60. Choose the correct sentence.
a) With the vial set inside the fly box, all the flies could be put to sleep within seconds.
b) With the vial set inside the fly box, all the flies could be put to sleep within seconds.
c) With the vial set inside the fly box, all the flies could be put to sleep within seconds.
d) With the vial set inside the fly box, all the flies could be put to sleep in seconds.
Hints: a)
-
61. In a nuclear reaction there is conservation of:
a) Only mass
b) Only energy
c) Only momentum
d) All of the above
Hints: d) in a nuclear reactor there is conservation of mass, energy and momentum.
-
62. A charge Q is divided into two parts q and Q-q and separated by a distance R the force of repulsion between them will be maximum when:
a) $q = Q/4$
b) $q = Q/2$
c) $q = Q$
d) $q = Q/8$
Hints:
 $F = \frac{k}{r} (Q-q) q$
If $q = \frac{Q}{2}$
Then $F \propto x \cdot x$
-
63. A ball of mass 0.5 kg is thrown normally against a wall at a speed of 12 ms⁻¹. It bounces back normally with a speed of 8 ms⁻¹. The collision lasts for 0.10 s. What is the average force on the ball due to the collision?
a) 0.2 N
b) 1 N
c) 20 N
d) 100 N
Hints:
 $F = \frac{\Delta p}{\Delta t}$
 $F = \frac{mv_2 - mv_1}{\Delta t}$
-
64. Equation of the normal to the circle $X^2 + Y^2 = a^2$ at the point (x₁, y₁)
a) $xy_1 - yx_1 = 0$
b) $xy_1 - yx_1 = 0$
c) $x = y + y_1, x = 0$
d) $xy_1 - yy_1 = 0$
Hint:
-
65. Non-linear equation in the following equation is:
a) $dv/dt = -32$
b) $dy/dx = x+1$
c) $d^2y/dx^2 + 2x dy/dx = 3$
d) $d^2y/dx^2 + 4y(d^2y/dx^2) + y = \cos t$



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75. Pascal sequence for (n=3) is:
(a) 1, 1, 0, 0, 0, (b) 1, 2, 1, 0, 0,.....
(c) 1,3,3,1,0,0,... (d) 1,4,6,4,1,0,....
Hints:
76. Let Z be a complex number, then $Z.Z^*$?
(d) All of the above
Hints:
77. The colour of Mn^{2+} and MnO_4^{2-} solution in water are respectively:
(a) Intense dark purple color and colorless
(b) Light purple color and colorless
(c) Intense dark purple color and brown color
(d) Light purple color and brown color
Hints:a)
78. A ring contains 1.2 gram of diamond, the number of carbon atoms in the ring are:
(a) $N_a/10$
(b) N_a
(c) $N_a/2$
(d) $1.2 N_a$
Hints:
79. Cylinder —A contains 4.6 grams of C_2H_5OH and cylinder —B has 3 grams C_2H_6
80. They don't allow people to park in front of their gate. Select the correct passive voice:
(a) People are not allowed to park in front of their gate.
(b) People are un-allowed to park in front of their gate.
(c) People were not allowed to park in front of their gate.
(d) People were not being allowed to park in front of their gate.
Hints:a)
81. The tip of a needle does not give a sharp image. It is due to:
(a) Polarization (b) Interference
(c) Diffraction (d) Refraction
Hints:c)
82. A fluid is undergoing incompressible flow which represents that:
(a) The pressure at a given point cannot change with time
(b) The velocity at a given point cannot change with time
(c) The density cannot change with time or location



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- (d) The velocity must be the same everywhere
Hints:
-
83. If C and R denote the capacity and resistance respectively the dimensions of CR are:
Hints: $Rc=t$
-
84. If $y = f(x)$ is continuous on (a, b) then $f(x)$ has inflection point at $x = c$, if:
(a) $f'(c) = 0$
(b) $f'(c) > 0$
(c) $f'(c) < 0$
(d) $f''(c) = 0$
Hints:
-
85. $2x^2 + 2y^2 - xy - 2y = 0$ does not represent a circle, because
(a) Degree is not two
(b) Involving the term xy
(c) Coefficient of x^2 and y^2 are unequal
(d) None of the above
Hints:
-
86. One root of $Z^2 + 2Z + 1 = 0$ is given by:
(a) $-1 + i$ (b) $1 + 2i$ (c) $1 - i$ (d) $1 + i$
Hints:
-
87. Helium shows negative joule Thomson effect due to its:
(a) Low viscosity (b) Inert nature
(c) Resistance to polarize (d) Low density
Hints: c)
-
88. Bond energy of covalent bond decreases with the increase in:
(a) Polarity (b) Multiplicity
(c) Size of atom (d) All of the above
Hints: c)
-
89. What volume of oxygen is required for complete combustion of 5cm^3 of CH_4 and 5cm^3 of C_2H_4 in same conditions?
(a) 5cm^3
(b) 10cm^3
(c) 25cm^3
(d) 15cm^3
Hints: b) according to Avogadro's law $V+N=V$ of oxygen
-
90. He said to her, —What a hot day!!
Select the correct Indirect speech:
(a) He exclaimed sorrowfully that it was hot day
(b) He told her that it was a hot day
(c) He exclaimed that it was a very hot day
(d) He said that it was a hot day
Hints:
-
91. The power loss, P in resistor is calculated by using the formula $p = V^2/R$. the uncertainty in the potential difference V is 3% and the uncertainty in the resistance R is 2%. What is the uncertainty in P?
a) 1%
b) 7%
c) 8%
d) 11%
Hints: $P = 2(2\%) + 2\%$
-
92. Vectors \vec{A} and \vec{B} each have



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- magnitude L . when drawn with their tails at the same point, the angle between them is 30° . The value of $\vec{A} \cdot \vec{B}$ is:
- (a) Zero
(b) L^2
(c) $\sqrt{3}L^2/2$
(d) $2L^2$
Hints: $\vec{A} \cdot \vec{B} = L^2 \cos 30^\circ$
-
93. A stone is thrown upward from the top of a cliff with an upward velocity component of 19.6 m/s . How long is the stone in the air?
(a) 4.00 s (b) 5.00 s (c) 6.00 s (d) 7.00 s
Hints:
-
94. A square matrix $C = [c_{ij}]$ is called upper triangular if:
(a) $a_{ij} = 0 \forall i > j$
(b) $a_{ij} = 0 \forall i < j$
(c) $a_{ij} = 0 \forall i = j$
(d) Both (b) & (c)
Hints:
-
95. The tangent line $x + y = 0$ intersects the parabola $x^2 = y$ at:
(a) Two coincident points
(b) Two real distinct points
(c) Two imaginary points (d) All of the above
Hints:
-
96. Newton-Raphson method for numerical approximation of a function $f(x) = 0$ is:
Hints:
-
97. Which of the following samples contain the maximum number of atoms?
(a) 4 grams of H_2
(b) 28 grams of N_2
(c) $22.4 \text{ grams of CO}_2$ at STP
(d) 1.5 mole of O_2
Hints: a) No. of atoms of g of H_2
1 mole of $\text{H}_2 = 2 \text{ g of H} = 6.022 \times 10^{23}$
-
98. Earthen pots keep water cool in hot summer due to:
(a) Capillary action (b) Surface tension
(c) Evaporation (d) Combined effect of (a) & (b)
Hints: d) earthen pots keep water cool due to capillary action and surface tension.
-
99. In the compound $\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$
(a) C-1 and C-2 are sp^2 hybridized
(b) C-1 and C-2 are sp hybridized and C-2 and C-3 are sp^2 hybridized
(c) All the carbon atoms are sp^2 hybridized
(d) All the statements are wrong
Hints: c)
-
100. Choose the correct sentence
a) My father is thinking that I should



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- stop smoking
b) My father thinks I should stop smoking
c) My father through I should stop smoking
d) My father think I should stop smoking
Hints: c)
-
101. A 5Kg concrete block is lowered with a downward acceleration of 2.8m/s^2 by means of a rope. The force of the block on the rope is:
(a) 14 N, up (b) 14 N, down
(c) 35 N, up (d) 35 N, down
Hints:
-
102. A monkey is accelerating down a string whose breaking strength is two-thirds of his weight. The minimum acceleration of the monkey should be:
(a) $1/3\text{g}$ (b) $2/3\text{g}$ (c) g (d) 0m/s
Hints:
-
103. For a wheel spinning on an axis through its center, the ratio of the radial acceleration of a point on the rim to the radial acceleration of a point halfway between the center and the rim is:
(a) 1 (b) 2 (c) $1/2$ (d) 4
Hints: $a_c = r\omega^2$
-
104. In the polynomial $p(x) = a_nx^n + a_{n-1}x^{n-1} + \dots + a_0$, a_n is called leading coefficient if:
(a) $n < 0$ (b) $n < 0$ (c) $n \neq 0$ (d) $a_n \neq 0$
-
- Hints:
105. If measure of the central angle of a minor arc is θ , then measure of the angle made by the major arc is:
(a) $1/2\theta$ (b) 2θ (c) 3θ (d) 10θ
Hints:
106. For what value of m the angle between $\vec{a} = m\hat{i} + \hat{j} - \hat{k}$ and $\vec{b} = \hat{i} + \hat{j} + m\hat{k}$ is 90° ? (a) 1 (b) 14 (c) 0 (d) 2
Hints:
107. Fullerenes are solid allotropes of:
(a) Fluorine (b) Phosphorus (c) Sculpture (d) Carbon
108. DDT is used as insecticides its molar mass is 354.5g/mol when DDT was analysed by chemist he found that it contained 47.4% carbon. How many carbon atoms are there in DDT molecule:
(a) 10 (b) 12 (c) 14 (d) 16
Hints:
109. Which of the following has the same number of electrons as an alpha particle?
(a) He (b) H (c) H^+ (d) Li^+
Hints: c)
110. Choose the correct sentence
(a) He probably isn't going to come to school tomorrow.
(b) He probably doesn't go to school tomorrow
(c) He probably isn't go to come to



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initially 48×10^{32} atoms of this isotope, the number of atoms of this isotope remaining after 26 h is:

- (a) 12×10^{32}
- (b) 6×10^{32}
- (c) 3×10^{32}
- (d) 6×10^4

Hints:

140. The proper time between two events is measured by clocks at rest in a reference frame in which the two events:

- (a) Occur at the same time
- (b) Occur at the same coordinates
- (c) Are separated by the distance a light signal can travel during the time interval
- (d) Occur in Boston

Hints: d)

141. In a photoelectric effect experiment the stopping potential is:

- (a) The energy required to remove an electron from the sample
- (b) The kinetic energy of the most energetic electron ejected
- (c) The potential energy of the most energetic electron ejected
- (d) The electric potential that causes the electron current to vanish

Hints: b)

142. In terms of \square , $\sin a = \frac{\square}{\square}$, where a, b, c are length of sides of a triangle.

- (a) $4sbc$
- (b) bc
- (c) $2bc$
- (d) $2a$

Hints: b)

143. The range of $y = \cos^{-1}x$, is:

- (a) $[\pi, 2\pi]$
- (b) $[\pi, 2\pi]$
- (c) $[0, \pi]$
- (d) $[0, 2\pi]$

Hints: d)

144. The eccentricity of an ellipse, $9x^2 + 4y^2 = 36$, is:

- (a) $\frac{3}{5}$
- (b) $\frac{5}{3}$
- (c) $\frac{3}{4}$
- (d) $\frac{4}{3}$

Hints:

145. When chlorine water is added to K₁ solution the solution become

- (a) Pale yellow
- (b) Violent
- (c) Brown
- (d) Red

Hints:

146. Which of the following elements with the given electronic configuration has the highest ionization energy?

- (a) $1s^2 2s^2 2p^4$
- (b) $1s^2 2s^2 2p^3$
- (c) $1s^2 2s^2 2p^6 3s^1$
- (d) $1s^2 2s^2 2p^6 3s^2 3p^3$

Hints:

147. Lucas reagent is:

- (a) H₂O / PbO₂
- (b) HCl / ZnCl₂
- (c) HCl / NaNO₂

Hints:

148. The custom department _____ the goods which were being smuggled into Pakistan.



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- (a) Usurped (b) Grabbed
(c) Confiscated (d) Posses
Hints: b)
-
149. A radium atom, 226
Ra ($Z = 86$) emits an alpha particle.
The number of protons in the resulting atom is:
(a) 84 (b) 85 (c) 86 (d) 88
Hints:
-
150. The function of the control rods in a nuclear reactor is to:
(a) Increase fission by slowing down the neutrons
(b) Decrease the energy of the neutrons without absorbing them
(c) Increase the ability of the neutrons to cause fission
(d) Decrease fission by absorbing neutrons
Hints: b)
-
151. Soft X-rays have:
(a) High energy (b) Low energy
(c) High frequency (d) Refracted by heavy atom
Hints: a)
-
152. If $g \times 3x = 1$, then $1/g \times g \times x$:
(a) Zero (b) x (c) $g(x)$ (d) None of the above
Hints: d)
-
153. Coordinates of the focus of the parabola $y^2 = -x$ is given by:
(a) 1, 0 (b) 1, 0.4 (c) 1, 0.4 (d) 4, 0
Hints: b)
-
154. If $23x^2$, for $x = 1$ then fx^2 , for $x = 1$, then flis:
(a) -1 (b) 0 (c) 3 (d) 5
Hints:
-
155. 60 a.m. of C-12 contain carbon atoms:
(a) 60 (b) 60.02 (c) 1023
(d) 56.021023
Hints:
-
156. The heat of vaporization of the liquid A, B and C are 60, 30 and 40 kcal/mole respectively the order of decreasing inter molecular forces among their molecules is:
(a) $A > B > C$ (b) $C > B > A$ (c) $A > C > B$ (d) $B > C > A$
Hints:
-
157. Complementary color of orange color is:
(a) Red (b) Green (c) Green blue (d) Yellow
Hints: b)
-
158. Choose the correct sentence
(a) I am much thankful to you
(b) I am quite thankful to you
(c) I am just thankful to you
(d) I am very thankful to you
Hints: d)
-
159. Two bodies of unequal mass, placed at rest on a frictionless surface, are acted on by equal horizontal forces for equal times. Just after these forces are removed, the body of greater mass will have:
(a) The greater acceleration



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- (b) The smaller momentum
(c) The greater momentum
(d) The same momentum as the other body
Hints: c)
-
160. Joule degree⁻¹ is the unit for
(a) Solar constant (b) Boltzmann's constant
(c) Stefan's constant (d) Planck's constant
Hints:d)
-
161. An object moves in a circle. If the mass is tripled, the speed halved, and the radius unchanged, then the magnitude of the centripetal force must be multiplied by a factor of:
(a) 3/2 (b) 3/4 (c) 9/4 (d) 6
Hints b)
-
162. The general term u_n of the series 1 1 1.4.7 4.7.10 7.10.13, is:
(a) $13n - 2$ (b) $3n - 1$
(c) $13n - 1$ (d) $3n - 4$
Hints: b)
-
163. If are the angles of a triangle with a, b and c as its sides, then which is the correct statement?
(a) $2a^2 = b^2 + c^2 - 2bc \cos A$
(b) $2a^2 = b^2 + c^2 + 2bc \cos A$
(c) $2a^2 = b^2 + c^2 - 2bc \cos C$
(d) $2a^2 = b^2 + c^2 + 2bc \cos C$
Hints:
-
164. Equation of a tangent to the parabola $y^2 = 4ax$ in the form $mx + y = c$ is:
(a) $2a^2m^2 = c^2$
(b) $2a^2m^2 = c^2$
(c) $2a^2m^2 = c^2$
(d) $2a^2m^2 = c^2$
Hints: b)
-
165. Cr and Cr²⁺ are inter convertible represented by equation:
Cr Yellow Orange
In the above reaction
(a) Cr acts as base
(b) Addition of base change the color from orange to yellow
(c) The addition of acid change the state of Cr from +6 to +4
(d) both (a) & (b)
Hints:
-
166. The polymer which contain nitrogen is:
(a) Polyethylene (b) Polyester (c) Teflon (d) Nylon
Hints:
-
167. -----

-
168. —Be Poles apart means:
(a) Either of the two poles
(b) Having nothing in common
(c) Leading position in a race
(d) Affect somebody greatly
Hints d)
-
169. A 2.5kg stone is released from rest and falls towards Earth after 4.0s, the magnitude of its momentum is:
(a) 98 kg .m/s (b) 78 kg . m/s
(c) 39 kg .m/s (d) (0)
Hints: b)
-
170. The angular speed of the minute



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hand of a watch is:

- (a) $(60/\pi)$ m/s (b) $(1800/\pi)$ m/s
(c) 39 m/s (d) $(\pi/1800)$ m/s
Hints: b)

171. One end of a cylindrical pipe has a radius of 1.5cm. Water (density = 1.0×10^3 kg/m³) which mass is leaving the pipe is:
(a) 2.5kg/s (b) 4.9kg/s
(c) 48 kg/s (d) 7.0×10^3 kg/s
Hints:

172. If $f(x, y, z) = x + y = \frac{1}{2}$ then
 $\frac{1}{az} f(0,0,z) =$:
(a) z^2
(b) $\frac{1}{z^2}$
(c) $2 \times \frac{1}{z^2}$
(d) $-\frac{1}{z^2}$
Hints:

173. The rank of matrix 'A' is the number of _____ rows in its echelon form.
(a) Zero (b) Identical (c) Non-zero (d) Equal
Hints:

174. The number of signals that can be given by six flags of different colors, using three flags at a time are:
(a) 6 (b) 3 (c) 120 (d) 18
Hints:

175. Which of the following cannot be explained by Bohr's theory?
(a) Be⁺⁺⁺
(b) H (c) He (d) Li⁺⁺
Hints:

176. A flask contain 6 gram of hydrogen gas and 64 gram

oxygen at r.t.p the partial pressure of hydrogen gas in the flask of the total pressure (p) will be:

- (a) $2/3$ p (b) $3/5$ p (c) $2/5$ p (d) $1/3$

Hints:

177. Methanethiol and ethanethiol is added to the natural gas:
(a) To make the combustion of natural gas very easy
(b) To increase the boiling point
(c) to detect the gas leakage by smell
(d) Both (a) & (b)
Hints: c)

178. He said, —May this child live long. Indirect form of the sentence is:
(a) He prayed that that child may live king
(b) He prayed that that child will living king
(c) He prayed that that child might live king
(d) He said that that child might live king
Hints:

179. It is impossible for two particles, each executing simple harmonic motion, to remain in phase with each other if they have different:
(a) Masses (b) Periods
(c) Amplitudes (d) Spring constants

180. On a warm day a pool of water transfers energy to the air as heat and freezes. This is a



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|---|---|
| <p>1. The tissues present in angiosperms but absent in gymnosperms are:
(a) Vessels (b) Companion cell
(c) Sieve tube (d) Both (a) and (b)
Hints: d) vessel elements in Xylem is the characteristic feature of Angiosperms and Companion cells of phloem is the characteristic feature of Angiosperms which is absent in gymnosperms and ferns.</p> | <p>4. The total energy of a particle executing S.H.M. is:
(a) Inversely proportional to the square of the amplitude
(b) Directly proportional to the amplitude
(c) Zero
(d) Directly proportional to the square of the amplitude
Hints: d)</p> |
| <p>2. Individuality of every persons is maintained by nucleotide genome sequence difference of:
(a) 1% (b) 2% (c) 3% (d) 5%
Hints: a) They've been discovering that Human don't just have differenced within their genes. They also have differences in the number of copies of genes as well. The latest finding suggests that human difference between individuals in 1%. What is more interesting is that we are 98.7% chimpanzee.</p> | <p>5. A weight suspended from an ideal spring oscillates up and down with a period T. If the amplitude of the oscillation is doubled, the period will be:
(a) T (b) 1 (c) 2T (d) T
Hints: a) As $T = 2\pi \sqrt{m/k}$</p> |
| <p>3. Mature cells of cartilage are:
(a) Chondrocytes (b) Osteocytes
(c) Osteoblasts (d) Osteoclasts
Hints: a: cartilage is a connective tissue consisting of a dense matrix of collagen fibers and elastic fibers embedded in rubbery ground substance. The matrix is produced by cells called chondroblasts, which become embedded in the matrix as</p> | <p>6. A heat engine:
(a) Converts heat input to an equivalent amount of work
(b) Converts work to an equivalent amount of heat
(c) Takes heat in, does work, and loses energy as heat
(d) Uses positive work done on the system to transfer heat from a low temperature reservoir to a high temperature reservoir
Hints: c)</p> |
| | <p>7. Choose the correct sentence.
(a) Each contained a different species of insect.</p> |



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(c) Multiparous cyme(d)
Cymosecapitulum

Hints:

22. The ripened & fertilized ovule is called:

(a) Fruit (b) Seed

(c) Endosperm (d) Per sperm

Hints: b) A seed is a ripened ovule.

At the time of separation from the parent plant it consists of an embryo and stored food supply, both of which are encased in a protective covering. The activation of the metabolic machinery of the embryo leading to emergence of a new seedling plant is known as germination.

23. In Compton scattering from stationary electrons the largest change in wavelength occurs when the photon is scattered through:

(a) 0°

(b) 45°

(c) 90°

(d) 180°

Hints: d) $\Delta\lambda = \frac{h}{m.c} (1 - \cos \theta)$

24. If the potential difference across a resistor is doubled: (a) Only the current is doubled

(b) Only the current is halved

(c) Only the resistance is doubled

(d) Only the resistance is halved

Hints: $V=IR$

25. Nuclear fusion in the sun is increasing in supply of:

(a) Hydrogen (b) Helium (c)

Nucleons

(d) Positrons

Hints: b)

26. _____ my mind, what we need in this company is a better marketing plan.

(a) For (b) In (c) To (d) At

Hints: c)

27. A dilute hydrochloric acid is added to a flask containing lime stone a gas is produced which is dissolved in lime water in a test tube a white precipitate is formed the precipitate is of:

(a) CaSO_4

(b) CaCO_3

(c) CaCl_2

(d) MgCO_3

Hints: b)

$\text{HCl} + \text{CaCO}_3 \rightarrow \text{H}_2\text{O} + \text{CO}_2 + \text{CaCl}_2$
gas produce CO_2 passes to lime water $(\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O})$

28. $2\text{XeF}_6 + \text{SiO}_2 \rightarrow 2\text{XeOF}_4 +$

SiF_4 Consider the above chemical reaction. If 122.6 g of XeF_6 reacts with 60 g of SiO_2 to form the products. Select the limiting reagent and amount of SiF_4 formed:

($\text{XeF}_6 = 245.3$ amu, $\text{SiO}_2 = 60$ amu, $\text{SiF}_4 = 104$ amu)

(a) XeF_6 , 26 g

(b) SiO_2 , 26 g

(c) XeF_6 , 52 g (d) SiO_2 , 52 g

Hints: a)

29. Ethanol reacts with $\text{CH}_3\text{CH}_2\text{MgBr}$ the product formed is:

(a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

(b) $\frac{\text{CH}_2}{\text{CH}_3} > \text{CHOH}$

(c) $\text{CH}_3\text{CH}_2\text{CHOH}$

(d) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COH}$

(d) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COH}$



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(d) $C_2H_4 > C_6H_6 > C_2H_2$

Hints: a)

In this order reactivity order is increasing because Alkene > Alkynes > Benzene, Alkynes are less reactive than alkanes because of two pi bonds.

48. The guard cell of the stomata in Monocot is:
(a) Kidney shape (b) Oval
(c) Rounded (d) Dumbbell shaped
Hints: d) kidney or bean shape guard cells are found in Dicot plants whereas Dumbel-shape
49. Photorespiration involved the following reaction which occurs in the sequence of:
(a) Glycolate → Glycine, Glycine → Serine + CO_2 , RuBP + O_2 → Glycolate
(b) RuBP + O_2 → Glycolate, Glycine → Serine + CO_2 , Glycolate → Glycine
(c) RuBP + O_2 → Glycolate, Glycolate → Glycine, Glycine → Serine + CO_2
(d) Glycine → Serine + CO_2 , RuBP + O_2 → Glycolate, Glycolate → Glycine
50. Which of the following statement is correct?
(a) High concentration of ADH increases blood pressure
(b) High concentration of ADH decreases blood pressure
(c) High concentration of ADH does not affect blood pressure
(d) High concentration of ADH bring blood pressure to normal
Hints: d) ADH is a hormone made by the hypothalamus in the brain and stored in the posterior pituitary gland. It tells the kidneys how much

water to conserve. ADH constantly regulates and balances the amount of water in blood. Higher water concentration increases the volume and pressure of blood.

51. The number of ejected photoelectrons increases with increase.
(a) In intensity of flight (b) In wavelength of light
(c) In frequency of light (d) Never
Hints: a)
52. How many oxygen atoms are present in 278g of Hydrated Ferrous Sulphate? ($FeSO_4 \cdot 7H_2O = 278$ any)
(a) 6.023×10^{23}
(b) 6.525×10^{24}
(c) 2.408×10^{23}
(d) 6.023×10^{22}
Hints: a)
$$n = \frac{\text{no of particles}}{NA}$$
$$\text{No. of particles (atom)} = n \times NA$$
$$n = \frac{\text{molar mass}}{278} = 1$$
$$\frac{278.0146}{278} = 1$$
$$\text{No. of atoms} = \frac{1 \times 6.022 \times 10^{23}}{6.022 \times 10^{23}}$$
53. Porifera is related to the sub Kingdom of:
(a) Protozoa (b) Parazoa (c) Metazoa
(d) Aves
Hints: b) The protozoa are considered to be a subkingdom of the kingdom Protista. The parazoa are an ancestral subkingdom of animals, literally translated as beside the animals.
Parazoa display no body symmetry (are asymmetrical); all other animal groups display some sort of



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its steam; it

_____ on as fiercely as ever.

- (a) Trudges (b) Meanders
(c) Ambles (d) Rages

Hints: a)

79. The principal has forbidden smoking on the campus.

Select the correct passive voice:

- a) Smoking has been forbidden on the campus by the principal.
b) Smoking had been forbidden on the campus by the principal.
c) Smoking was being forbidden on the campus by the principal.
d) It is forbidden by the principal to smoke on campus.

Hints: a)

80. Choose reaction that does not require ZnCl₃ catalyst:

- (a) $\text{CH}_3\text{CH}_2\text{OH} + \text{HCl} \rightarrow \text{CH}_3\text{CH}_2\text{Cl} + \text{H}_2\text{O}$
(b) $\text{CH}_3\text{CH}_2\text{OH} + \text{HBr} \rightarrow \text{CH}_3\text{CH}_2\text{Br} + \text{H}_2\text{O}$
(c) $\text{CH}_3\text{CH}_2\text{OH} + \text{HI} \rightarrow \text{CH}_3\text{CH}_2\text{I} + \text{H}_2\text{O}$
(d) Both (b) & (c)

Hints: d)

81. 81. Select the correct reaction of the following

- (a) $\text{SnO} + 4\text{NaOH} \rightarrow \text{Sn}(\text{OH})_4 + 2\text{Na}_2\text{O}$
(b) $\text{SnO} + 4\text{NaOH} \rightarrow \text{Na}_4\text{Sn}(\text{OH})_4$
(c) $\text{SnO} + 2\text{NaOH} \rightarrow \text{Na}_2\text{Sn}(\text{OH})_4$
(d) None of the above

Hints: a)

82. Choose the true statement regarding

the reaction given below $2\text{Na}(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{NaCl}(\text{s})$

- (a) Chloride is oxidized and sodium is reduced
(b) Chlorine acts as an oxidizing agent and sodium as reducing agent
(c) Chlorine acts as a reducing agent and
(d) None of the above

Hints: b) The estimated 1.2 million [0.98-1.6 million] people dying from HIV globally in 2014

83. World-wide, mortality rate per annum due to AIDS is more than:

- (a) One million (b) Two-million
(c) Three million (d) five-million

Hints: b)

84. —Portuguese-man of war is the:

- (a) Desert-snake (b) Coelenterate
(c) A big-reptile (d) Black-forest monkey

Hints: c)

85. Rootless, stem-less and leafless plants are:

- (a) Liverworts (b) Mosses
(c) Psilopsida (d) Onion

Hints: a) In Liverworts, the gametophytic plant body may be thallose (e.g., Riccia) or foliose. In Mosses, the gametophytic plant body is differentiated into prostrate, branched filamentous, thalloid protonema and leafy erect gametophore.

86. The changing electric flux in a certain region of space produces:

- (a) An electric field
(b) Magnetic field

(c) both S//and A//

(d) None of the above



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assumption of collision theory of reaction rate:
(a) For chemical reaction to occur molecule/ particles must collide
(b) For reacting molecules/ Particles must possess a certain minimum amount of energy, the activation energy
(c) Every collision is not productive
(d) For hydrogen molecule formation from atoms require specific orientation
Hints: d)

105 Basidiocarps are developed by:

(a) Primary mycelium
(b) Secondary mycelium
(c) Tertiary mycelium
(d) Quaternary mycelium
Hints: c) The tertiary mycelium is simply an organized mass of secondary mycelium. It is a morphologically complex tissue and form structures such as the typically mushroom-shaped basidiocarps commonly seen in nature.

106 Outer wall of guard cell is:

(a) Thick & elastic (b) Thick & non elastic
(c) Thin & elastic (d) Thin & non elastic
Hints: c) The inner wall of a guard cell is thicker than the outer wall. When the guard cell is filled with water and it becomes turgid, the outer wall balloons outward, drawing the inner wall with it and causing stomata to enlarge.

107 Eating of high carbohydrate food are signs and symptoms of:

(a) Obesity (b) Bulimia nervosa
(c) Dyspepsia (d) Anorexia nervosa

Hints: a) Bulimia Nervosa is an eating disorder in which a person may eat a lot of food (Binge eating of high carbohydrates) and then try to get rid of the food by vomiting, using laxatives and over exercising.

108 The frequency at which 1 henry inductor have reactance of 500Ω is:
(a) 80Hz (b) 800Hz (c) 8000Hz
(d) 50Hz

Hints: a) $f = \frac{X_L}{2\pi L}$

109 A neutron with K.E equal to 0.04eV is called?

(a) Slow neutron (b) Thermal neutron
(c) Fast neutron (d) Both (a) and (b)
Hints: d)

110 Radiation damages living organism is primarily due to:

(a) Excitation phenomena (b) Ionization
(c) Photo electric effect (d) Heating
Hints: d)

111 . Communication technology has brought a tremendous revolution in modern societies.

Select the correct passive voice:
(a) A tremendous revolution has been brought in communication technology in modern societies.
(b) In modern societies a tremendous revolutions has been brought in communication technology.
(c) A tremendous revolution has brought in communication technology in modern societies
(d) Communication technology has tremendous



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127 127. A moving charged particle is surrounded by ??

- (a) 1 field (b) 3 fields (c) 2 fields
(d) 4 fields

Hints: c)

128 Water flows from a 6.0cm diameter pipe into 8.0cm diameter pipe. The speed in the 6.0cm pipe is 5.0m/s. the speed in the 8cm pipe is:

- (a) 2.8m/s (b) 3.7m/s (c) 6.6m/s
(d) 8.8m/s

$$A_1V_1 = A_2V_2$$

Hints: a)

$$A_1V_1 = A_2V_2$$

129 I insist _____ the withdrawal of your statement.

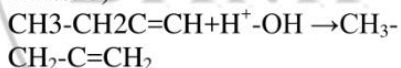
- (a) for (b) on (c) at (d) in

Hints: b)

130 In the $\text{CH}_3\text{CH}_2\text{C}=\text{CH} + \text{H}_2\text{O} \rightarrow ?$

- (a) $\text{CH}_3\text{CHO} + \text{CH}_3\text{CHO}$
(b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2-\text{OH}$
(c) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
(d) $\text{CH}_3\text{CH}_2\text{COCH}_3$

Hints: d)



131 The infrared spectra commonly referred to as IR spectra is usually expressed as:

- (a) Wave length (b) Wave number
(c) Frequency (d) All of the above

Hints: a)

132 Which statement is correct for three way catalytic converter:

- (a) Reduces emission of unburnt HC's
(b) Reduces pollutants
(c) Oxidize pollutant like CO
(d) All of the above

Hints: d)

133 Which of the following are components of homeostatic mechanism;

- (a) Receptor, Regulators, Effectors
(b) Receptors, Integrator, Effectors
(c) Sensors, Brain, Effectors
(d) All of the above

Hints: d) Homeostatic control mechanisms have at least three interdependent components: a receptor, integrating center, and effector. The receptor senses environmental stimuli, sending the information to the integrating center (brain and spinal chord) which signals an effector (e.g. muscles or an organ) to respond to the stimuli.

134 The botanical name of deadly nightshade is:

- (a) *Atropa belladonna* (b) *Taxus baccata*
(c) *Narcissus spp* (d) Both (a) & (b)

Hints: a) *Atropa belladonna*, commonly known as belladonna or deadly nightshade, is a perennial herbaceous plant (rhizomatous hemicryptophyte) in the Nightshade family (which includes tomatoes, potatoes, eggplant, etc.) Solanaceae, native to Europe, North Africa, and western Asia.

135 Hormone inhibin is produced by:

- (a) Hypothalamus (b) Pituitary gland
(c) Prostrate (d) Sertoli cells

Hints: d) Inhibin is produced in the gonads, pituitary gland, placenta, corpus luteum and other organs. FSH stimulates the secretion of inhibin from the granulosa cells of



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- 145** A water sample contains 3.8 $\times 10^3$ g of mercury per kilo gram of the sample. What is the concentration of mercury in parts per million?
(a) 3.8 ppm (b) 38 ppm (c) 0.38 ppm
(d) 380 ppm
Hints: a)
- 146** Select the reaction when the supply of air is very limited.
(a) $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} + \text{heat}$
(b) $2\text{CH}_4 + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 4\text{H}_2\text{O} + \text{heat}$
(c) $\text{CH}_3 - \text{CH}_3 + 7\text{O}_2 \rightarrow \text{CO}_2 + 6\text{H}_2\text{O} + \text{heat}$
(d) $2\text{CH}_4 + 2\text{O}_2 \rightarrow 2\text{C} + 4\text{H}_2\text{O} + \text{heat}$
Hints: d)
 $\text{CH}_4 + 2\text{O}_2 \rightarrow 2\text{C} + 4\text{H}_2\text{O} + \text{heat}$
- 147** All of the following are micronutrients except
(a) Iron (b) Chlorine (c) Copper (d) Potassium
Hints: b) there are 7 essential plant nutrient elements defined as micronutrients [boron (B), zinc (Zn), manganese (Mn), iron (Fe), copper (Cu), molybdenum (Mo), chlorine (Cl)]. They constitute in total less than 1% of the dry weight of most plants.
- 148** Auxin travels by diffusion towards:
(a) Shoot (b) Flowers
(c) Leaves (d) Base of plant
Hints: a) In the root vasculature, auxin is transported directionally downwards, towards the root tip.
- 149** Reptiles flourished in _____ period.
(a) Jurassic (b) Mesozoic
(c) Metazolic (d) Both (a) & (b)
Hints: b) Reptiles flourished in Mesozoic era (225-65million years ago).
- 150** Signal from a remote control to the device operated by it, travels with the speed of:
(a) Sound (b) Supersonic
(c) Ultrasonic (d) Light
Hints: d)
- 151** Frown on somebody* means to:
(a) Fall flat upon a stranger
(b) Stay alive working hard
(c) Unable to be successful
(d) Disapprove of somebody
Hints: d)
- 152** The main components of lipstick are:
(a) Mixture of non-volatile oil and solid wax
(b) Mixture of volatile oil and wax
(c) Fats and wax (d) Fates, oil and wax
Hints: a)
- 153** Which of the following solution will have
(a) 1 molar solution of urea
(b) 1 molar solution of glucose
(c) 1 molar solution of sodium chloride
(d) 1 molar solution of magnesium chloride
Hints: d)
- 154** The spin states of a nucleus of an atom in absence of applied magnetic field have:
(a) Different energies (b) Equal energies
(c) Zero energies (d) High energies
Hints: b)
Both have equal energies because no change will occur in the absence of



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- magnetic field.
-
- 155** The Sulphur Bacteria which obtain energy by oxidizing H₂S instead of water is called:
(a) Alpha proteobacteria (b) Beta proteobacteria
(c) Gamma proteobacteria (d) Gamma proteobacteria
Hints: c) The purple sulfur acteria are a group of proteobacteria capable of photosynthesis, collectively referred to as purple bacteria. They are anaerobic or micreaerophilic, and are often found in hot springs or stagnant water. They use hydrogen sulfide, which is oxidized to produce granules of elemental sulfur.
-
- 156** Which of the following is non-steroidal hormone?
(a) Cortisol (b) Testosterone
(c) Insulin (d) Aldosterone
Hints: c) steroidal hormones a devaives of cholesol. E.g.cortisol, aldosterone, estrogen, progesterone and testosterone.
-
- 157** Stop codons are:
(a) UAA,UAG,UGA (b) UGC,UCG,AAA
(c) UUG,UCG,UCA (d) UAA,UGC,UCA
Hints: a) stop codons are sequences of DNA and RNA proteins by stringing amino acids together. There are three RNA stop codons; UAG, UAA, and UGA in DNA,the uracil (U) is replaced by thymine (T).
-
- 158** Which of the following electromagnetic waves has the smallest wavelength?
-
- (a) X-rays (b) Gamma rays
(c) Microwaves (d) Ultraviolet rays
Hints: c) $\lambda = \frac{hc}{E}$
-
- 159** The temperature coefficient of resistance of a semiconductor is:
(a) Positive (b) Negative
(c) Imaginary (d) Zero
Hints: b)
-
- 160** The ground state energy of H-atom is 13.6 eV. The energy needed to ionize H-atom from its second excited state is:
(a) 1.51 eV (b) 3.4 eV (c) 13.6 eV
(d) 12.1 eV
Hints: a)
-
- 161** The tissue culture method occur in the following sequence:
(a) Sterilization →media preparation →inoculation →callus development →plantlets
(b) Media preparation →sterilization →inoculation →callus development →plantlets
(c) Media preparation →inoculation →sterilization →callus development →plantlets
(d) Inoculation →sterilization →media preparation →callus development →plantlets
Hints: a)
-
- 162** A condition in which the artery is thickened and blocked by cholesterol is called.
(a) Arteriosclerosis (b) Atherosclerosis
(c) Thrombosis (d) Embolism
Hints: a) The thickening and hardening of the walls of the



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194 Which of the following is spontaneous reaction?

- (a) $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$
- (b) $2NaCl(g) \rightarrow 2Na(g) + Cl_2(g)$
- (c) $Zn^{2+} + Cu \rightarrow Zn + Cu^{2+}$
- (d) $2Fe(OH)_3 \rightarrow 2Fe + 3O_2 + 3H_2$

Hints: a)

195 Two objects, P and Q have the same momentum. Q has more kinetic energy than P if it:

- (a) Weighs more than P
- (b) Is moving faster than P
- (c) Weighs the same as P
- (d) Is moving slower than P

Hints: b) $E = \frac{p^2}{2m} = \frac{1}{2}mv^2$

196 A child, riding on a large merry-go-round, travels a distance of 3000m in a circle of diameter 40m. the total angle through which she revolves is:

- (a) 50 rad (b) 75 rad (c) 150 rad
- (d) 314 rad

Hints: c)

197 Anwar said, —Naveed must go tomorrow. Select the correct indirect speech:

- (a) Anwar declared that Naveed must have gone the following day
- (b) Anwar exclaimed that Naveed would have to go the following day.
- (c) Anwar said that Naveed would have to go the following day.
- (d) Anwar said that Naveed shall go the following day.

Hints: a)

198 Choose atom that is not having a spin quantum number .

- (a) Cl³⁵
- (b) N¹⁵
- (c) F¹⁹
- (d) O¹⁶

Hints: d)

199 Select the correct reaction.

- (a)
- (b)
- (c)
- (d)

Hints: a)

200 Excess of BaSO₄ was dissolved in pure water at 25°C. If its $K_{sp} = 1 \times 10^{-10}$ what is the Conc: of Ba²⁺ ions in water?

- (a) 10⁻¹⁰
- (b) 10⁻²⁰
- (c) 10⁻⁵
- (d) 10⁻⁶

Hints: a)

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varies with time to second as $I = 4 \sin(200\pi t)$, the frequency of current is:

- (A) 100 Hz (B) 50 Hz
(C) 400 Hz (D) 150 Hz

Hints: a) $w = \sum \pi f$

$$200\pi = 2\pi f$$

$$f = \frac{200}{2} = 100 \text{ Hz}$$

18. The radius of hydrogen atom is:

- (A) 0.529 Å
(B) $0.529 \times 10^{-20} \text{ m}$
(C) $0.529 \times 10^{-8} \text{ cm}$
(D) both ((A) & (C))

Hints: d) $0.592 \text{ Å} = 0.592 \times 10^{-10} \text{ m}$ OR $0.592 \times 10^{-8} \text{ cm}$

19. Select ortho/para directing group of the following:

- (A) -NO₂
(B) -OH
(C) -CN
(D) -C-OH

Hints: b) -OH is electron donating group. Which increase the electron density at ortho and para position.

20. The number of atoms in 18g of H₂O are equal to:

- (A) 6.023×10^{23} atoms
(B) 6.023×10^{24} atoms
(C) 1.806×10^{24} atoms
(D) 3.052×10^{23} atoms

Hints: a) no of moles = no of atoms / N_A
No of atoms = $n \times N_A$
 $N = 18/18 = 1$ Atoms = $1 \times N_A$, $N_A = 6.023 \times 10^{23}$

21. Students _____ submit their assignments in time or they will be marked absent.

- (A) Would (B) Shall (C) Must
(D) May

Hints: c) Must

22. $\int \frac{x}{x^2+1} dx$ is:

- (A) $\ln|x^2+1| + C$
(B) $\frac{1}{2} \ln|x^2+1| + C$
(C) $-\ln|x^2+1| + C$
(D) $-\frac{1}{2} \ln|x^2+1| + C$

Hints: b) Rule $\int \frac{f'(x)}{f(x)} dx = \ln f(x) + C$

23. The ratio of dy to dx for $y^2 = x$ is:

- (A) $dy/dx = y$
(B) $dy/dx = z/y$
(C) $dy/dx = y/x$
(D) $dy/dx = x/y$

$$\frac{d}{dx}(xy) = \frac{d}{dx}(2)$$

Hints: c) $x \frac{dy}{dx} + y \cdot 1 = 0$

$$\frac{dy}{dx} = -\frac{y}{x}$$

24. The critical values of $f(x) = 2x^3 + 3x^2 - 12x + 5$ (for relative extreme) are:

- (A) 1 and 2
(B) -1 and -2
(C) 1 and -2
(D) -1 and 2

Hints: c) for c. Value $f'(x) = 0$

25. In N type semi-conductor, conduction is due to mainly by:

- (A) Hole (B) Protons
(C) Electrons (D) Neutrons

Hints: c) Electrons
26. According to the band theory of solids in the conductors, the conduction band and valence band

- are:
(A) Separated by large space
(B) Overlapped
(C) Separated by forbidden energy gap



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Hints: b) Greater the size of the atom, stronger will be the London forms.

34. In SN₂ reaction, there is:
(A) 50% inversion of configuration
(B) 100% inversion of configuration
(C) 80% inversion of configuration
(D) No inversion of configuration

Hints: b) SN₂ primary alkyl halide react with base e.g. (NaOH)

35. Let $f(x) = 2x - 1$ and $g(x) = 2x + 5$, then $f(g(2))$
(A) 5
(B) 11
(C) Undefined
(D) -5

Hints: a) composition of functions
 $f \circ g(x) = f(g(x))$
 $f(g(2)) = f(3) = 6 - 1 = 5$

36. A square matrix $M = [a_{ij}]$ of order n with complex entries. If (M^t) , then which is correct?
(A) M is skew-hermitical
(B) $a_{ij} = -a_{ji}$ for $i, j = 1, 2, 3, \dots, n$
(C) M is Anti-hermitical
(D) All of the above

Hints: M is a skew-hermitian.

37. A helicopter of mass 3.0×10^3 Kg rises vertically with a constant speed of 2 m/s, what resultant force acts on the helicopter?

(A) Zero (B) 3×10^4 N downwards

(C) 4.5 N upwards

(D) 7.5×10^4 N upwards

Hints: a) Zero $F = ma$ $v = \text{const}$ t

$F = 0, a = 0$

$A = \frac{\Delta v}{\Delta t} = \frac{0}{\Delta t} = 0$

38. The velocity of projectile equal to its initial velocity added to:
(A) A constant horizontal velocity
(B) A constant vertical velocity
(C) A constantly increasing horizontally
(D) A constantly increasing downward vertically

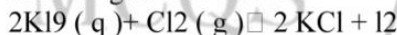
Hints: d) same velocity both protection and impact point.

39. A feather and lead ball are dropped from rest in vacuum on the moon, the acceleration of feather is:

(A) More than that of the lead ball
(B) The same as that of lead ball
(C) Less than that of lead ball
(D) 9.8 ms⁻²

Hints: b) The same as that of lead ball

40. Choose the statement which is NOT correct. When chlorine gas is passed through potassium iodide solution, iodine is liberated according to the reaction.



(A) Chlorine acts as an oxidizing agent
(B) Chlorine accepts electron and form chloride ion
(C) Iodide ion done its electron to chlorine
(D) Iodine oxidizes chlorine to form chloride ion

Hints: a) Cl₂ act as oxidizing agent because Cl₂ oxidation changes form 0 \rightarrow -1 (decrease in oxidation number)

41. Ammonium hydroxide is added to an aqueous solution containing Cu²⁺ ions deep blue colored



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$4y^2$, is:

(A) 4 (B) -4 (C) 43 (D) 34

Hints: c) $x^2 = 4/3$ y $x^2 = 4ay$

L.R = $4a = 4/3$

60. Measurement of radiation from an astronomical source showed a decrease in the wave length at which the greatest energy was being received. This could mean that the source had:
- (A) Increase in temperature
(B) Decrease in temperature
(C) Expand but maintained a constant temperature
(D) Moved further away

Hints: a) $f \propto \frac{1}{\lambda}$ Doppler effect

$E \propto f$

61. A certain automobile is 6m long at rest, if it is measured to be $4/5$ as long, its speed is:
- (A) $0.1c$ (B) $0.3c$ (C) $0.6c$ (D) $0.8c$

Hints: c) $l = l_0 \sqrt{1 - v^2/c^2}$

62. 18 carat gold contain:
- (A) 70-75% Gold (Au) and 15-20% copper (Cu)
(B) 70-75% Gold (Au) and 20-25% copper (Cu)
(C) 75-80% Gold (Au) and 20-30% Copper (Cu)
(D) 100% Gold (Au) with no Copper (Cu)

Hints: b) 70-75% Gold (Au) and 20-25% copper (Cu)

63. The correct sentence is:
- (A) Everyone should mind his/her own business
(B) Everyone should mind their own business
(C) Everyone should mind one's

own business

(D) Everybody should mind one's own business

Hints: c) Everyone should mind one's own business

64. $2^3 \times 4^x \times 16^2 \times 64^y$ □ □ □ □ □ □

(A) $\sin x$

(B) $\cos x$

(C) e^{-x}

(D) $\log x$

Hints: c) Maclaurin Series

65. The equation of continuity for fluid flow can be derived from the conservation of:

(A) Volume (B) Mass (C)

Energy

(D) Pressure

$A_1 v_1 = A_2 v_2$

Hints: b)

$\Delta m / \Delta t = \delta \Delta v / \Delta t$

66. In a hyperbola, $e =$ □

(A) $\frac{\sqrt{a^2 + b^2}}{a^2}$

(B) $\frac{\sqrt{a^2 - b^2}}{a^2}$

(C) 1

(D) 0

Hints: a) $ac = c$

$e = c/a$ in hyperbola $c = \sqrt{a^2 + b^2}$

67. The scientific notation of a number 0.0023 is expressed as:

(A) 2.3×10^{-3}

(B) 0.023×10^{-2}

(C) 2.3×10^{-4}

(D) 0.2×10^3

Hints: a) 2.3×10^{-3}

68. Which one of the following pairs of electrical unit are not equivalent?

(A) wbm^{-2} , T

(B) J-S-1, w

(C) J-C-1, V



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- (D) AS^{-1}, C
Hints: d) AS^{-1}, C
69. Two vectors \vec{A} and \vec{B} are such that $\vec{A} \cdot \vec{B} = \vec{C}$ and $A^2 = B^2 = C^2$. If θ is the angle between positive direction of A and B, then θ is:
(A) $0=0$
(B) $\pi/2$
(C) $0=\pi/3= \pi/3$
(D) $0=\pi$
Hints: b) $\vec{a} \cdot \vec{b} = |\vec{a}| |\vec{b}| \cos \theta$ ($\theta=90^\circ$)
70. The energy of electromagnetic radiation depends on its:
(A) Frequency (B) Wave length
(C) Wave number (D) All of the above
Hints: d) $E = hc/\lambda$ EMR depends on all.
71. 18.0 g of glucose is dissolved in 100g of solvent water the molality of the resultant solution is:
(A) 0.01m (B) 0.1m (C) 1.0m
(D) 10.0m
Hints: a) Mass of Glucose = 18.0g
72. A leakage of natural gas is usually detected by the strong repulsive smell of certain compound such as:
(A) Methanethiol (B) Phenol
(C) Formaldehyde (D) Naphthalene
Hints: a) CH_4 is a color less and odourless gass by adding methanol due to (s) group methane have pungent
73. 'NEPOTISM' means:
(A) Criticism (B) Socialism
(C) Favoritism (D) Monotheism
Hints: d) Monotheism
74. For any Complex number Z, $Z \cdot \bar{Z} =$
(A) $Z \cdot Z$ (B) $2Z$ (C) Z^2 (D) All of the above
Hints: b) $z \cdot \bar{z} = (a+ib)(a-ib) = a^2+b^2$
75. For $n \in \mathbb{N}$, $\sum_{k=1}^n k^2 =$
(A) 1
(B) 0
(C) ∞
(D) -1
Hints: d) -4 is odd for $4=2n-1$
76. Fehling's solution is added to the following compounds. Select the one that will show positive test.
(A) $\begin{array}{c} O \\ || \\ CH_3CCH_3 \end{array}$
(B) $\begin{array}{c} O \\ || \\ CH_3CC_2H_5 \end{array}$
(C) $\begin{array}{c} O \\ || \\ CH_3C-H \end{array}$
(D) $\begin{array}{c} O \\ || \\ CH_3CH_2C-CH_2CH_3 \end{array}$
Hints: c) CH_3C-H
77. If you had _____ her on the matter, you would not have made this blunder.
(A) Advised (B) Consulted
(C) Discussed (D) Referred
Hints: b) Consulted
78. What is the inverse function of $f(x) = 4\sqrt{2x}$
(A) $1/2(x-4)^2$
(B) $2-x^2$
(C) $4-x^2$
(D) $(4-x)^2$
Hints: a) $y=f(x)$
 $X=f^{-1}(y)$
79. $\frac{\cos 3a - \sin 3a}{\cos a - \sin a} =$
(A) $1 + 2 \sin a \cos a$



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as $I = 4 \sin(200\pi t)$, the r.m.s value of current in $-AI$ is:

- (A) 2
- (B) $4\sqrt{2}$
- (C) $\frac{4}{\sqrt{2}}$
- (D) $\frac{2}{\sqrt{2}}$

Hints: c) $I_{rms} = \frac{1}{\sqrt{2}} = \frac{4}{\sqrt{2}}$

91. The resonance frequency of an LCR circuit is:

- (A) $\frac{1}{2\pi Lc}$
- (B) $2\pi\sqrt{LC}$
- (C) $1/Lc$
- (D) $\frac{1}{2\pi\sqrt{LC}}$

Hints: d) $\frac{1}{2\pi\sqrt{LC}}$

92. The phase angle between the voltage and current in A.C through a pure inductor is:

- (A) 0°
- (B) 90°
- (C) 60°
- (D) 180°

Hints: b)

93. Two glucose units combined by glycoside bond the product formed is known as:

- (A) Sucrose (B) Maltose (C) Lactose
- (D) Cellulose

Hints: b) Maltose

94. In helium neon LASER, the laser light arises from a transition from a _____ state to _____.

- (A) He-He (B) Ne-Ne (C) He-Ne
- (D) Ne-He

Hints: b)

95. The half-life of radium is about 1600 years if a rock initially

contains 1g of radium, amount left after 6400 years will be about:

- (A) 62mg (B) 31mg (C) 16mg
- (D) Less than 16mg

Hints: a) $1g = 1000mg$, $\frac{6400}{1600} = 4$ 000

divided four time by 2

$\frac{1000}{2} = \frac{500}{2} = \frac{250}{2} = \frac{125}{2} = 62.5$ or 62 mg

96. Which of the following is a noble metal?

- (A) Argon
- (B) Silicon
- (C) Gold
- (D) Iron

Hints: a) Group VIII noble metal contain Argon as an element

97. 800cm³ of a gas at 400 torr pressure and 60 °C was heated unit the volume of gas become 2000cm³. The final temperature of the gas will be:

- (A) 832.5 K (B) 559.5K
- (C) 1105.2 K (D) 726.5 K

Hints: a) According to Charles Law

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}, T_2 = \frac{V_2 \times T_1}{V_1}$$

98. A gaseous mixture contains 9.6% NH₃, 22.6% N₂ and 67.8% H₂ gases. If the total pressure is 50 atm, then the partial pressure of H₂ is:

- (A) $\frac{67.8 \times 100}{50}$
- (B) $\frac{50 \times 100}{67.8}$
- (C) $\frac{50 \times 100}{67.8}$
- (D) $\frac{67.8 \times 50}{100}$

Hints: d) partial pressure

$$H_2 = \frac{67.8 \times 50}{100}$$

Because 67.8% of H₂ = $\frac{PP H_2 \times 100}{50}$



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- (B) Electrostatic attraction
(C) Weak Vander Waal's forces
(D) Strong Vander Waal's forces
Hints: b) Because of weak vander waal's forces they always exist as diatomic form E.g (Cl₂, Be₂, I₂)
108. NH₃(aq) + H₂O(l) ⇌ N + O
Calculate the ionization constant for the above equation if (NH₄⁺) is 10⁻⁵M, (NH₃) is 1.0M and (OH) is 0.15M.
(A) 1.5 × 10⁻⁵
(B) 1.5 × 10⁻⁶
(C) 1.5 × 10⁻⁴
(D) 1.0 × 10⁻⁶
Hints: b)
109. A pale moon and watery sun are known as prognostics of rain. The underlined word means:
(A) Indications (B) Start (C) Cause (D) Friends
Hints: a) Indications
110. Linear programming plays important role in:
(A) Trade (B) Industry (C) Agriculture (D) All of the above
Hints: b) Industry
111. 'CRANKY SPOUSE' implies:
(A) A carefully selected loving partner of life
(B) Fussy and bad-tempered wife or husband
(C) Money squandering younger second wife
(D) A device fitted behind the rear seat of a car
Hints: b) Fussy and bad – tempered wife or husband
112. $\sin(2\pi - \beta) =$
(A) $\sin \beta$
(B) $-\sin \beta$
(C) $\cos 2\pi$
(D) $\sin 2\pi$
Hints: b) Allied angle for sine
113. The initial point of the vector $r = (-2, -1, 2)$ form the terminal point (4, -1, -2) is:
(A) (2, 1, -2)
(B) (-4, 1, 2)
(C) (-6, 0, -4)
(D) (-6, 0, 4)
Hints: c) $\vec{A} \cdot \vec{B} = \vec{R}$
114. Area of a triangle having vertices A(2, 2, 0), B(-1, 0, 2) and C(0, 4, 3) is:
(A) 30
(B) 15
(C) 15/2
(D) 16
 $\vec{AB} = (4, -1, -2)$
Hints: c) $\vec{AC} = (-2, 2, 3)$
 $= 15/2$
115. If the displacement of a particle executing S.H.M is given by $x = \sin(20\pi t)$ cms, its amplitude is:
(A) $5/\pi$ m
(B) $5/\pi$ cm
(C) 20π cms
(D) 100 cms
Hints: b) $x = x_0 \sin 2\pi ft$ cms
 $X = 5/\pi \sin 2\pi ft$ cms
 $X_0 = 5/\pi$
116. The total energy of the body executing S.H.M is E. The K.E when the displacement is half of the amplitude is:
(A) E/a



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- (D) $b < c < a$
Hints: a) Those hydrocarbons which are straight chain form have high (B.P) branching will decrease boiling point.
123. Which one of the following is carbolic acid?
(A) 10% solution of Acetic acid
(B) 5% solution of Benzoic acid
(C) 5% solution of phenol
(D) Concentrated solution of lactic acid
Hints: c) C_6H_5-OH or phenol is known as carbolic acid (phenol)
124. Choose the correct sentence;
(A) I am a Pakistani and so is she.
(B) I am a Pakistani and she is also.
(C) She and me are Pakistani.
(D) I am a Pakistani as is she.
Hints: a) I am a Pakistani and so is she.
125. If A and B are any two events defined in a sample space then $P(A - B) =$
(A) $P(A) - P(A \cap B)$
(B) $P(A) - P(A \cup B)$
(C) $P(A \cup B) - P(A)$
(D) $P(A \cap B)$
Hints: a) $P(A) - P(A \cap B)$
126. For a geometric series $a_1 + a_2 + a_3 + \dots + a_n$ with common ratio $r \neq 1$, $S_n =$
(A) $\frac{rn-1}{r-1}$
(B) $\frac{r-1}{rn-1}$
(C) $\frac{a_1(rn-1)}{r-1}$
(D) $\frac{a_1(rn+1)}{r+1}$
Hints: c) sum to 1^{st} n terms of G.P
127. Fire destroyed the top floor of the building. Select the correct passive voice
(A) The top floor of the building got destroyed by fire
(B) By fire was destroyed the top floor of the building
(C) Destroyed by fire was the top floor of the building
(D) The top floor of the building was destroyed by fire
Hints: d) The top floor of the building was destroyed by fire.
128. $a^2 = b^2 + c^2 - 2bc \cos A$ is called
(A) law of sines
(B) law of cosine
(C) law of tangents
(D) law of cotangents
Hints: b) Law of cosines
129. In three dimensional space two vectors are said to be collinear if they lie
(A) along the same line
(B) along the different lines
(C) above the line
(D) below the line
Hints: a)
130. $\forall Z_1 + Z_2 \in C, Z_1 - Z_2 =$
(A) $Z_1 + Z_2$
(B) $Z_1 - Z_2$
(C) $Z_1 - Z_2$
(D) $Z_2 - Z_1$
Hints: b) Conjugate of complex numbers
131. In a meter bridge experiment an unknown resistance „x,, is compared with a known resistance „R,, should
(A) much higher in value than R
(B) much lower in value than R
(C) In the same order as R
(D) on the right of R in the bridge



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140. GET HOLD OF ONESELF implies:
(A) To start running (B) To catch a thief
(C) To become calm (D) to feel exhausted
Hints: c) To become calm
141. $\frac{d}{dx} \cos^{-1} x =$
(A) $\frac{1}{\sqrt{1+x^2}}$
(B) $\frac{1}{\sqrt{1-x^2}}$
(C) $\frac{-1}{\sqrt{1+x^2}}$
(D) $\frac{-1}{\sqrt{1-x^2}}$
Hints: d) Derivation inverse of cosine function
142. Equation of the normal at the point x_1, y_1 to the parabola $y^2 = 4ax$ is:
(A) $yy_1 = 2a(x + x_1)$
(B) $y - y_1 = -\frac{y_1}{2a}(x - x_1)$
(C) $y + y_1 = -\frac{y_1}{2a}(x - x_1)$
(D) $yy_1 = 2a(x - x_1)$
Hints: b) $y - y_1 = -\frac{y_1}{2a}(x - x_1)$
143. The conic having eccentricity $e > 1$, is called:
(A) Hyperbola (B) Ellipse
(C) Parabola (D) Asymptotes
Hints: a) Conic depends on e , $e > 1$, for hyperbola.
144. In a Compton scattering from stationary electrons the largest change in wave length occurs when the photon scattering through:
(A) 0°
(B) 45°
(C) 90°
(D) 180°
Hints: d) $\Delta\lambda = \frac{h}{m_0c}(1 - \cos\theta)$, $\cos 180 = -1$
145. DAUNTED means:
(A) Intimidate (B) Speculate
(C) Emancipate (D) Evacuate
Hints: a) Intimidate
146. For any two vectors a and b making an angle θ between the, then $a \cdot b = 0$ if and only if:
(A) $a \perp b$
(B) $\theta = \frac{\pi}{2}$
(C) Either $a=0$ or $b=0$
(D) All of the above.
Hints: b) $\vec{a} \cdot \vec{b} = ab \cos 90$, $\cos 90 = 0$, $\vec{a} \cdot \vec{b} = 0$
147. If A, G, H are Arithmetic, Geometric and Harmonic Mean, between two positive numbers a, b then;
(A) $G > H$
(B) $G^2 = AH$
(C) $A > G$
(D) All of the above.
Hints: d) All of the above
148. In the expansion $(a+b)^n$, ${}^nC_0 =$
(A) nC_1
(B) nC_2
(C) ${}^nC_{n-1}$
(D) nC_n
Hints: d) nC_n
149. When a mass is rotating in a plane about a fixed point, its angular momentum is directed along
(A) Radius (B) Tangent to the orbit
(C) A line perpendicular to the plane of rotation
(D) None of the above.
Hints: c)



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169. If ${}^nC_1 = 36$ then n will be:
(A) $n=9$
(B) $n=8$
(C) $n=7$
(D) $n=10$
Hints: a) $n=9$
170. The numbers which have $\sqrt{-1}$ as one factor are called:
(A) Real numbers
(B) Complex number
(C) Irrational numbers
(D) Imaginary numbers
Hints: b) Complex numbers
171. In iso-thermal process there is no change in:
(A) Pressure (B) Work done
(C) Internal energy (D) Imaginary numbers
Hints: c) $\Delta Q = \Delta E^\circ + \Delta W$ Isotherm is a process in which the temperature is constant. Hence the internal energy is constant.
172. $C_p > C_v$ because in the case of C_p :
(A) More heat is required to do the external work
(B) Heat is needed to do external work
(C) No heat is required to increase the internal energy
(D) Heat is required to do external work against external volume
Hints: b) Heat required to the system to push the position against external pressure.
173. Which of the following color have greater wavelength?
(A) Red (B) Blue (C) Green
(D) Orange
Hints: a) Because Red colour wavelength is greater from 620-750nm
174. Choose the correct sentence:
(A) One must not boast of his own success.
(B) One must not boast of her own success.
(C) One must not boast of one's own success.
(D) One must not boast of ones own success.
Hints: c) One must not boast of one's own success.
175. If v denotes the velocity, then $\lim_{h \rightarrow 0} \frac{v(t+h) - v(t)}{h}$ defines:
(A) Velocity (B) Distance
(C) Acceleration (D) Average velocity
Hints: c) $2a = \frac{v2f - v2i}{s}$
176. m_n , $a_m(x)$ ($\log(a)$) is the n th derivative of:
(A) $m a^x$
(B) $a^m x$
(C) $m n a^x$
(D) $(m a^x)^n$
Hints: b) a^{mx}
177. Anti derivative of zero is
(A) Zero (B) +1 (C) Any constant
(D) -1
Hints: c) Anti - derivative of zero is any constant.
178. The dimension of self inductance is;
(A) MLT^2
(B) $ML^2T^{-2}A^{-2}$
(C) $M^2L^{-1}T^1$
(D) $MT^{-2}A^{-1}$
Hints: b) $L = \frac{\epsilon \Delta t}{\Delta I}$
179. When an iron core is inserted in to



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- (D) High breaking length
Hints: c) High young's modulus
198. Two wires have the same diameter and length. One is made of copper the other is brass. The wires are connected to gather end to end when the free end are pulled in opposite direction then the two wires must have the same.
(A) Stress (B) Strain
(C) Elongation (D) Young's modulus
Hints: d) $y = \frac{T \cdot stress}{T \cdot stress}$
 $y = \frac{F/A}{\Delta l/l} = \frac{Fl}{A\Delta l}$
199. Choose the major product of the following reaction:
 $CH_3CH_2CONH_2 \xrightarrow[\text{ether}]{LiAlH_4}$ Product
(A) $CH_3CH_2NH_2$
(B) $CH_3CH_2CH_2NH_2$
(C) $CH_3CH_2NH_4$
(D) $CH_3CH_2CH_2NH_4$
Hints: b) $CH_3CH_2CONH_2 \xrightarrow[\text{ether}]{LiAlH_4}$
- $CH_3-CH_2-CH_2-NH_2$
2 bonds of oxygen remove and 2 H are added.
200. Artificial nails are usually made up of:
(a) Acrylic
(b) Nitrocellouse
(c) None of these
(d) Erythrosine
Hints: a) Acrylic is used in artificial nails.
201.
202.

Since 2016



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- ?
- a) Micro wave
b) Radio wave
c) Infrared region
d) X-rays
- Hints: b) High energy, short wavelengths
 $f a \frac{1}{\lambda}$
7. The reduction of aldehydes and ketones in the presence of zinc amalgam and HCl is termed as:
a) Grignard reduction
b) Clemmenson reduction
c) Wolf-kishner reduction
d) Friedel-creft reduction
Hints: b) Clemmenson reduction
8. Aiman in laboratory dissolve 4g of NaOH in 250ml of water. The molarity of this solution is:
a) 0.4M
b) 4M
c) 0.2M
d) 0.1M
Hints: a) Amount taken by Aiman = 4g Molar mass of NaOH= 40g
No of moles = $\frac{\text{amount taken}}{\text{molar mass}} = \frac{4}{40} = 0.1 \text{ mole}$
Molarity = $\frac{\text{no of moles}}{\text{vol;of solution in lit or dm}^3} = \frac{0.1}{0.25L} = 0.4$
9. For all adiabatic processes:
a) The entropy of the system does not change
b) The entropy of the system increases
c) The entropy of the system decreases
d) The entropy of the system does not change.
- Hints: a) $\Delta Q = \Delta U + \Delta W \Rightarrow -\Delta U = \Delta W$ or $Q=0$
10. A battery is permanently connected to a parallel plate capacitor and the energy stored is x joules. When one plate is moved so that separation of the plate is doubled, the energy now stored in joule is:
a) 4x
b) 2x
c) x/2
d) x/
Hints: b) $u = \frac{1}{2} \epsilon_0 E^2 Ax$
 $U = \frac{1}{2} \text{constant } x$
 $u = x$
 $u a x$
 $2x a 2x$
11. Your friend proved more sympathetic than i expected he do.
a) Will
b) Shall
c) Would
d) Should
Hints: c) would
12. Human body thermostat is:
a) Medulla
b) Medulla Oblangata
c) Body fluid
d) Hypothalamus
Hints: d) Hypothalamus is a very small and important part of



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the region encloses

- a) Both electric and magnetic field
- b) Both magnetic and gravitational field
- c) A magnetic field only
- d) An electric field only

Hints: c) $F=qvB$, magnitude motion depends on motion

20. The isotope which decay by β^{-1} emission to produce ${}_{48}\text{Cd}^{111}$ is:
- a) ${}_{47}\text{Ag}^{111}$
 - b) ${}_{47}\text{Ag}^{110}$
 - c) ${}_{47}\text{Ag}^{112}$
 - d) ${}_{49}\text{In}^{111}$

Hints: a) with each β^{-1} emission the atomic number increase by one.

21. An electron is projected with a velocity v into a region where there exists uniform electric field of strength E perpendicular to a uniform magnetic field of flux density B . If the electron velocity is to remain constant, V must be:
- a) Of magnitude B/E and parallel to B
 - b) Of magnitude E/B and parallel to B
 - c) Of magnitude B/E and perpendicular to both \vec{E} and \vec{B}
 - d) Of magnitude E/B and perpendicular to both \vec{E} and \vec{B}

Hints: d) $V=E/B$

22. The lady sitting me has an elegant style.
- a) at

- b) beside
- c) about
- d) around

Hints: b) beside

23. Sunken-stomata are found in the leaves of:
- a) Hydrophytes
 - b) Xerophytes
 - c) Mesophytes
 - d) Gibberellins

Hints: b) sunken stomata are found in Xerophytes surrounded by cuticle and hairs called as Trichomes. They are sunken below plain of epidermis.

24. Which of the following animals is not endothermic?
- a) Salamander
 - b) Great white shark
 - c) Polar bear
 - d) Butterfly

Hints: b) Endotherms (warm blooded animals) maintain constant body temp (Independent of environment).

25. Embryonic mass can generate all of the following except:
- a) Amnion
 - b) Chorion
 - c) Yolk sac
 - d) Allantois

Hints: b) the inner cell mass becomes embryonic disc which forms embryo and extra embryonic membranes except chorion (Trophoblast derivative).

26. The aqueous solution of which one of the following compounds



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section A, and A_2 with velocities V_1 and V_2 respectively.

The ratio of the speed V_1/V_2 is:

- a) A_1/A_2
- b) A_2/A_1
- c) $\frac{\sqrt{A_1}}{A_2}$
- d) $\frac{\sqrt{A_2}}{A_1}$

Hints: b) $A_1 V_1 = A_2 V_2$,

$V_1/V_2 = A_2/A_1$

34. Water flows through a constriction in a horizontal pipe as it enters the constriction, the water's

- a) Speed increases and pressure remains constant
- b) Speed increases and pressure increases
- c) Speed increases and pressure decreases
- d) Speed decreases and pressure increases

Hints: c) $Va \frac{1}{A}$, $P.Ea \frac{1}{K.E}$

35. Will you give me your bicycle? (passive form of the sentence is)

- a) Will your bicycle be given to me by you?
- b) Shall you be given your bicycle by you?
- c) I shall be given your bicycle by you?
- d) Your bicycle will be given to me by you?

Hints: a) will your bicycle be given to me by you?

36. The optimum pH of enzyme maltase is:

- a) 4.5

- b) 5.5
- c) 6.1 – 6.8
- d) 6.7 – 7

Hints: d) 6.7 – 7

37. Mature ovum in human beings is surrounded by:

- a) Plasma membrane
- b) Vitelline membrane
- c) Corona radiata
- d) All of the above

Hints: d) Mature ovum is surrounded by 3 layers.

Vitelline membrane (Inner, thick and adjacent to plasma membrane), Zona pellucida (Middle, Thin) and Corona Radiata (Outer, thick).

38. In mitochondria UGA codon act to specify

- a) Arginine
- b) Glutamic acid
- c) Tryptophan
- d) Valine

Hints: c) UGA in mitochondria codes for tryptophan rather than as a chain terminator.

39. When an electron drops from any higher orbit i.e. $n_2 \geq 3$ to the second orbit $n_1 = 2$, the spectral lines produced fall in the region:

- a) Visible
- b) Ultraviolet
- c) Infrared
- d) None of these

Hints: a) $n=2, 3, 4, 5$ to $n=1$ is UV

$n=3, 4, 5$ to $n=2$ is visible

$n=4, 5$ to $n=3$ is IR.

Balmer series. Visible region



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- $mv^2 = 5\% + 12\% = 17\%$
47. Weight rather than mass be used in calculating:
- Moment of inertia of a body
 - The stress in a wire due to load hanging from it
 - The binding energy of the nucleus
 - The gravitational force between the two bodies
- Hints: d) The attractive force of earth on body is weight.
48. A flat coil of wire having 5 turns has an inductance L. the inductance of similar coil having 20 turns is:
- 4L
 - L/4
 - Ml
 - L
- Hints: a) $\frac{L_1}{L_2} = \frac{N_1}{N_2}$
 $L_2 N_2 = L_1 N_1$
 $L_2 = \frac{L_1 N_2}{N_1} = \frac{20}{5} L$
 $L_2 = 4L_1$
49. Semi-conductor material have
- Ionic bond
 - Covalent bond
 - Mutual bond
 - Metallic bond
- Hints: b) Covalent bond
50. She does not wash clothes on Fridays. (*Passive form of the sentence is*)
- Clothes are not being washed by her on fridyas.
 - Clothes were not washed by her on Fridays.
 - Clothes were not being washed by her on Fridays.
 - Clothes are not washed by her on Fridays.
- Hints: d) Clothes are not washed by her on Fridays.
51. Misuse of cannabis results.
- Psychosis
 - Euphoria
 - Paranoio
 - Photophobia
- Hints: a) Cannabis known as marijuana causes Halucinations. So its abuse can result in psychosis which is a mental disorder.
52. Outer wall of Guard cells is:
- Thin and elastic
 - Thick and elastic
 - Thin and non elastic
 - Thick and non elastic
- Hints: a) Gaseous exchange in plants and protected by guard cells through diffusion.
53. The critical day length of a short-day plant is:
- 11 :00 hours
 - 15 : 00 hours
 - 11 :1/2 hours
 - 15 :1/2 hours
- Hints: d) short day plants need continuous 8.5 hours dark period for flowering.
54. Select ligand which is bidentate and can form chelates.
- CH_3CH_2
 - PH_3
 - $\text{H}_2\text{O CH}_2 \text{NH}_2$
 - $\text{CH}_2 \text{NH}_2$
- Hints: d)
55. The proton acceptor is:
- NH_3



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- Hints: d) Chloroplast is a type of plastid in plant cells. Its length ranges from 5-10 micrometer and 2-3 micrometer thickness.
64. Heterospory occur in:
a) Selaginella
b) Equisetum
c) Lycopodium
d) Lepidodendron
Hints: a) lycopodium is homosporous-all spores are equal in size. Selaginella and Isoetes are heterosporous-spores are of two distinct sizes, microspores and megaspores.
65. Select cresol out of the following benzene derivatives?
Hints: d)
66. Select the correct formula of chloropenta aqua-chromium (iii) chloride.
a) $[\text{Cr}(\text{H}_2\text{O}_5) \text{Cl}] \text{Cl}_3$
b) $[\text{Cr}(\text{H}_2\text{O}_5) 5\text{Cl}] \text{Cl}_2$
c) $[\text{Cr}(\text{H}_2\text{O})_5 \text{Cl}_3] \text{Cl}$
d) $[\text{Cr}(\text{H}_2\text{O})_5 \text{Cl}_3] \text{Cl}_3$
Hints: a) $[\text{Cr}(\text{H}_2\text{O}_5) \text{Cl}] \text{Cl}_3$
67. The components of bronze alloy are:
a) Copper and zinc
b) Copper and tin
c) Zinc and tin
d) Chromium and tin
Hints: b) Cu-17-90% and Tin 25-10%
68. A larger water tank open at the top has small hole in the bottom when the water level is 30 m above the bottom of the tank the speed of the water leaking from the hole is:
a) 2.5 m/s
b) 24 m/s
c) 44 m/s
d) Cannot be calculated unless the area of the hole is give
Hints: b) $v = \sqrt{2gh}$, = $\sqrt{29.8 \text{ m/s} \times 30 \text{ m}} = 24 \text{ m/s}$
69. A 6.0 kg block is released from rest 80 m above the ground. When it has fallen 60 m its kinetic energy is approximately:
a) 4800 J
b) 3500 J
c) 1200 J
d) 120 J
Hints: b) $\text{K.E} = \frac{1}{2} mv^2$, $2gh = v^2 - v_i^2$, $[v_i = 0, h = 60 \text{ m}]$
70. A science museum designs an experiment to show the fall of feather in a vertical glass vacuum tube. The time of fall from rest is too close to 0.5 s. What length of tube is required?
a) 1.3 m
b) 2.5 m
c) 5.0 m
d) 10.0 m
Hints: a) $S = v_i t + \frac{1}{2} gt^2$ $[v_i = 0, s = ?]$
71. Two projectiles are in flight at the same time.
a) Fall flat upon a stranger,
b) Stay alive working hard
c) Unable to be successful
d) Disapprove of some body
Hints: d) Disapprove of some body
72. Two projectiles are in flight at



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- the same time.
- a) Is always 9.8 m-s^{-2}
 - b) Can be horizontal
 - c) Can be large as 19.8 m-s^{-2}
 - d) Is zero
- Hints: d) Time of flight is zero.
73. A body is moving in a circle of radius (r) with a variable speed, the acceleration of the body is:
- a) Centripetal acceleration
 - b) Tangential acceleration
 - c) Angular acceleration
 - d) All of the above
- Hints: d) Satisfy all acceleration
74. He said to me, Why have you come late?
[indirect form of the sentence is:]
- a) He asked me why I had come late.
 - b) He asked me why I came late.
 - c) He asked me why I have come late
 - d) He told me as to why I had come late.
- Hints: a) He asked me why I had come late.
75. The product of light reaction travels from:
- a) Cristae to stroma
 - b) Stroma to hrana
 - c) Grana to cristae
 - d) Grana to stroma
- Hints: d) As light reaction occurs in Grana and its products are: ATP and 2 NADPH while dark reaction completes in stroma of chloroplast.
76. In stomach the pepsinogen is synthesized and secreted by:
- a) Mucus cells
 - b) Parietal cells
 - c) Hormonal cells
 - d) Chief cells
- Hints: d) parietal cells secrete HCl, Chief cells secretes Pepsinogen, Mucus cells secretes Mucus and Hrmonal cells secretes Gastrin.
77. Amount of O_2 carried by red blood cells is:
- a) 77%
 - b) 90%
 - c) 87%
 - d) 97%
- Hints: d) 97% of O_2 is carried in the form of Oxyhaemoglebin while 3 % as dissolved plasma.
78. Chooses the correct relationship, when E=energy, h=planks constant, c=velocity of light, u = frequency, λ wavelength:
- a) $E=hvc$
 - b) $E=c/\lambda$
 - c) $E=hv$
- Hints: c) as $E= hv$ (planks equation, quanta energy)
79. Choose reactants whose reaction product is ester:
- a) CH_3OOH and CH_3OCH_3
 - b) CH_3COOH and $\text{C}_2\text{H}_5\text{OH}$
 - c) CH_3COOH and CH_3CHO
 - d) CH_3COOH and CH_3COCH
- Hints: b) CH_3COOH and $\text{C}_2\text{H}_5\text{OH}$
80. Choose the IUPAC name of the following compound:
- a) 4-methyl-2-pentene



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- d) 1900 ml
Hints: a) the normal blood flow to the brain in resting hours is 750 ml / minute and this flow doubles during exercise.
90. The number of hydrogen bond between guanine and cytosine are:
a) One
b) Two
c) Three
d) Four
Hints: c) IN DNA purine and pyrimidines are bonded by Hydrogen bonds i.e Guanine forms three Hydrogen bonds with Cystein, while Adenine form 2 Hydrogen bonds with thymine.
91. Chromium compound in which oxidation state is 6+ behave as:
a) strong oxidizing agent
b) strong reducing agent
c) very weak oxidizing agent
d) very weak reducing agent
Hints: a) strong oxidizing agent
92. The shear modulus of elasticity G is:
a) $Al/F\theta$
b) $Fl/A\theta$
c) $F/A\theta$
d) $A\theta/F$
Hints: c) $\frac{F}{AQ}, \frac{F/A}{\tan\theta}, \tan\theta$
93. In P type substances, the charge carriers in minorities are:
a) Holes
b) Electrons
c) Proton
d) Positive ions
- Hints: b) Electrons, number of negative charges are small.
94. The local inns are bursting at the seams and may not be able to accommodate anymore. [The underlined phrase means]:
a) Unhygienic
b) Overcrowded
c) Empty
d) Shutting Down
Hints b) overcrowded
95. The larva of balanoglossus (Hemichordate) is called:
a) Bipinnaria
b) Radiolaria
c) Tornaria
d) Trochophore
Hints: c) Toranaria larva was 1st described by J. Muller. Balanoglossus is an ocean dwelling worm and is hemichordate.
96. The oragans of excretion in crustacean are:
a) Iron
b) Copper
c) Zinc
d) Magnesium
Hints: c) Crustaceans are arthropdes and their waste materials are collected from the body by clusters of blunt, hollow tubes called am Malphigian Tubules.
97. All of the following are micronutrients except:
a) Iron
b) Copper
c) Zinc
d) Magnesium



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- parasitics specie.
105. Excited electrons from photo system –II are captured by:
a) PC
b) PQ
c) Cytochrome-b
d) Cytochrom-f
Hints: b) PQ is Quiuone molecule involved in photosynthesis.
106. Dicotyledonous flowers are usually:
a) Dimerous
b) Trimerous
c) Tetramerous
d) Pentamerous
Hints: d) (There are two correct options c and In monocots, flowers are trimerous (number of flower parts in a whorl of threes), while in dicots the flowers are tetramerous or pentamerous (flower parts are n multiples of fours or fives).
107. Select mineral that is considered as macronutrint.
a) Phosphorus
b) Zinc
c) Iron
d) Iodine
Hints: a) phosphorus is a primary macronutreint (Required in large amount).
108. Two atoms A and B have the electronic configuration given below:
(x) $1S^2 2S^2 2P^6 3S^1$
(y) $1S^2 2S^2 2P^5$
Which of the following compounds are they likely to
- form?
a) Xy
b) Xy_2
c) X_2y
d) Xy_3
Hints: a) The X has on electron in last shell and Y has one electron deficient, so the compound likely to form XY.
109. Which of the following ions can act both as bronsted acid and base in solvent water?
a)
b)
c)
d) PO_4^{-3}
Hints: c) As base
 $HCO_3^- + H_3O^+ \rightarrow H_2CO_3 + H_2O$
As acid
 $HCO_3^- + OH^- \rightarrow CO_3^{2-} + H_2O$
110. Which of the following is the best evidence for the wave nature of matter?
a) The photoelectric effect
b) The Compton effect
c) The spectral radiation form cavity radiation
d) The reflection of electrons by crystal
Hints: d) Diffraction of electrons. Davission and germer expt.
111. The rotational analogue of mass in linear motion is:
a) Torque
b) Weight
c) Moment of inertia
d) Angular momentum
Hints: c) $I=mr^2$



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112. The ratio of inertial mass to the gravitational mass is equal to:

- a) $\frac{1}{2}$
- b) 1
- c) 2
- d) No fixed number

Hints: b)

$$F = ma, m = \frac{F}{a} \quad m = \frac{w}{g}, \frac{m}{m} =$$

$$\frac{F/a}{w/g} = 1$$

113. Choose the correct sentence:

- a) He threw it out the window
- b) He threw it out the window.
- c) He thrown it out the window.
- d) He threw it out the window.

Hints: b) He threw it out the window.

114. 6-NADH can yield:

- a) 12-ATP
- b) 39-ATP
- c) 18-ATP
- d) 36-ATP

Hints: c) 1 NADH in ETC produce 12 protons which helps ATP synthase to use this gradient for the formation of 3 ATPs.

115. Rhizobium belong to sub group of bacteria called:

- a) Alpha-protobacteria
- b) Beta-protobacteria
- c) Gamma-protobacteria
- d) Delta-protobacteria

Hints: a) Majority of Alpha protobacteria are phototrophic.

116. Bacteria living in the gut, forms the association of:

- a) Mutualism

- b) Peridation
- c) Parasitism
- d) Commensalism

Hints: a) Symbiosis/Mutualism refers to the association in which both members are benefited.

117. Which is the strongest acid?

- a) CH_3COOH
- b) CH_2ClCOOH
- c) CHCl_2COOH
- d) CCl_3COOH

Hints: a) CH_3COOH can easily donate a proton.

118. Choose the type of hybridization of carbon atoms in cyclopropane and the bond angle C-C-C

- a) Sp^3 , 109.5°
- b) Sp^3 , 60°
- c) Sp^2 , 120°
- d) Sp^2 , 107°

Hints: b) Sp^3 , 60°

119. Hemiacetal containing both:

- a) Alcohol and aldehyde function groups
- b) Alcohol and ether functional groups
- c) Aldehyde and ether function groups
- d) Alcohol and carboxylic acid function groups

Hints: b) Alcohol and ether functional groups

120. A satellite is orbiting close to the surface of the earth, its speed is:

- a)
- b)
- c) $Rg/2$



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- c) Lieing
d) Lied
Hints: b) lying
145. All of the following are trioploblastic animals except:
a) Amphibian
b) Mollusca
c) Coelenterate
d) Echinodermata
Hints: c) Triploblastic Animal phyla:
Platyhelminthes,
Nemathelminthes, annelida,
Arthropda, Mollusca,
Echinodermata and chordate.
146. Hermaphrodite phylum is:
a) Annelida
b) Arthropoda
c) Echinodermata
d) Mollusca
Hints: d) Hermaphrodite refers to an organism that reproductive organs associated with both male and female sexes. e.g snail.
147. A hormone that helps in growing seed less grapes,
a) Auxins
b) Cytokines
c) Ethylene
d) Gibberellins
Hints: d) Most commercial seedless grapes are sprayed with gibberellin to increase the size of the fruit and also to make the fruit clustres less tightly packed.
148. Oligosaccharides class of carbohydrates contain monosaccharides of about:
a) 2 to 8 units
- b) 2 to 9 units
c) 2 to 10 units
d) 2 to 11 units
Hints: c) Oligo Sacchrides means few sugars. Constant in Beer-lambert law is the characteristics of the:
149. Molar extinction coefficient (ϵ) a constant in Beer-lambert law is the characteristics of the :
a) Solute
b) Solvent
c) Concentration
d) All of the above
Hints: d) $A = \epsilon = A/cI$
150. The energy difference between adjacent energy levels of the hydrogen atom:
a) Increases with increasing energy
b) Decreases with increasing energy
c) First increases and then decreases with increasing energy
d) First decreases and then increases with increasing energy
Hints: b) Energy increasing, difference between levels decreasing.
151. A parachute of mass 80 kg descends vertically at a constant velocity of 3.0 m-s^{-1} taking acceleration of free fall as 10 m-s^{-1} , what is the net force acting on him?
a) 800 N upwards
b) Zero
c) 240 N downwards



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- d) COOH
Hints: b) $-NR_2$
168. What is number of hydrogen atoms in 5 moles of water?
a) 3.0115×10^{24}
b) 6.023×10^{24}
c) 6.023×10^{23}
d) 5.0×10^{25}
Hints: b) The formula of water is H_2O . One molecule contains two H atoms $5 \times 2 \times 6.023 \times 10^{23}$
169. In the main postulated of Bohr atomic theory the angular momentum of electron in hydrogen atom is given by the relationship.
a) $mv = \frac{h}{2\pi Ze^2}$
b) $r = \frac{4\pi E_0 m v}{nh}$
c) $mvr = \frac{nh}{2\pi}$
d) hvc
Hints: c) $mvr = \frac{nh}{2\pi}$
170. Colors of thin film result from:
a) Dispersion
b) Interference of light
c) Absorption of light
d) Scattering of light
Hints: b) Constructive and destructive interference.
171. During a reversible adiabatic expansion of an ideal gas, which of the following is not true?
a) $PV^\gamma = \text{constant}$
b) $PV = \text{constant}$
c) $PV = nRT$
d) $TV^\gamma = \text{Constant}$
Hints: b) this is true for isothermal process.
172. If the direction of initial velocity of the charged particle is neither along nor perpendicular to that of magnetic field then the orbit will be:
a) Circle
b) Helix
c) Ellipse
d) Straight line
Hints: b) Spring type path
173. Choose the correct sentence:
a) If I knew him better, I would have insisted that he change the hour of the lecture.
b) If I knew him better, I would have insisted that he changed the hour of the lecture
c) If I knew him better, I would insist that he change the hour of the lecture.
d) If I knew him better, I would insist for him to change the hour of the lecture.
Hints: c) If I knew him better, I would insist that he change the hour of the lecture.
174. The interval between two successive divisions of bacteria is called:
a) Ecological time
b) Population time
c) Growth time
d) Generation time
Hints: d) time taken by a cell to become two or period between two successive generations is referred as Generation time.
175. Most disease symptoms appear during:
a) Lag phase



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- b) Log phase
c) Decline phase
d) Stop phase
Hints: b) Rising bacterial population inflicts greater tissue damage in the host.
176. Exdotoxins are released only when bacteria:
a) Excert
b) Reproduce
c) Die
d) Secrete hormones
Hints: c) Antibiotics, antibodies and bacterial cell death may cause release of endotoxins (lipopolysaccharides).
177. The osmotic pressure of dilute solution is given by the formula:
a) $\pi = \frac{RTC}{m}$
b) $\pi = \frac{RTC}{M}$
c) $\pi = \frac{RTC}{M}$
d) None of the above
Hints: c) $\pi = \frac{RTC}{M}$
178. Select the test used for the estimation of glucose in blood and urine?
a) Tollen`s reagent test
b) Fehling`s solution test
c) Benedict solution test
d) All of the above
Hints: c) Benedict solution test
179. Excess of ethanol is heated with conc: sulphuric acid keeping the temperature 140°C. The product formed is:
a) $C_2H_5C_2H_5+H_2O$
b) C_2H_4
c) C_2H_5OH
d) C_2H_6
Hints: b) Ethene will form, dehydration occurs.
180. The mechanical energy spent by the external agency is converted into electrical energy stored in the coil. This relates to:
a) Ohm`s law
b) Coulomb`s law
c) Lenz`s law
d) Newton`s law of motion
Hints: c) $\varepsilon = -\frac{N\Delta\phi}{\Delta t}$ -ive shows Conservation of energy.
181. If $\frac{\Delta v}{\Delta r}$ is potential gradient, then the intensity of electric field at a point is:
a)
b)
c)
d)
Hints: c) $E = -\frac{\Delta V}{\Delta r}$ potential gradient $\frac{\Delta V}{\Delta r}$
182. 'Be poles apart' means:
a) Either of the two poles,
b) Have nothing in common,
c) Leaking position in a race,
d) Affect somebody greatly
Hints: b) Have nothing in common,
183. Phosphodiester linkage is formed between,
a) Two nucleo bases
b) Two sugar molecules
c) Two phosphates
d) Nucleotides and phosphates
Hints: d) PHOSPHODIESER BOND
184. A condition of excessive thirst



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due to diabetes is called:

- a) Polyuria
- b) Glycosuria
- c) Polyphagia
- d) Phlydipsia

Hints: d) Increased thirst can occur as a result of high blood sugar levels in diabetes or to be diagnosed diabetes patients.

185. Implantation of zygote takes place in the:
- a) 2nd week
 - b) 3rd week
 - c) 4th week
 - d) 5th week

Hints: a) After fertilization egg stays for 3-5 days in fallopian tube before entering the uterus and begins to implant itself to the uterine wall.

186. The shape of SnCl_2 is:
- a) Linear
 - b) Trigonal pyramidal
 - c) Trigonal planar
 - d) Angular

Hints: c) In SnCl_2 the central metal atom contains 3 electron pairs, one is lone pair and two are bond pairs. They arrange around the central atom in a V shape with an angle of 120° .

187. Which is not true about Grignard reagent?
- a) They are highly reactive compounds
 - b) They are very stable compounds and can be isolated easily
 - c) They have synthetic importance

d) They are represented by general formula RMgX

Hints: b) Grignard reagent cannot be isolated easily from ether medium in which it is prepared.

188. Conc: HCl is added to a metal salt and then subjected to flame test on platinum wire. It imparts crimson color to the flame. Which metal salt is it?
- a) Sodium
 - b) Potassium
 - c) Strontium
 - d) Calcium

Hints: c) Sodium is intense yellow, potassium is Lilac, Strontium is Crimson and Calcium is Brick red.

189. The unit of the electric field is:
- a) N/C
 - b) V/m
 - c) J/C.m
 - d) All of the above

Hints: d) All $E = F/q$, $E =$

$$\Delta V / \Delta r$$

190. The electric field due to uniform distribution of charge on a spherical shell is zero.
- a) Every where
 - b) Only at the center of shell
 - c) Only inside the shell
 - d) Only one side of the shell

Hints: c) $q_{\text{net}} = 0$, $E = 0$ inside the conductor. 1st Application of Gauss's Law.

ETEAM ENGLISH

PARTS OF
SPEECH

DIRECT
INDIRECT
NARRATION

USE OF
TENSES

NOUN
PHRASE

ARTICLES

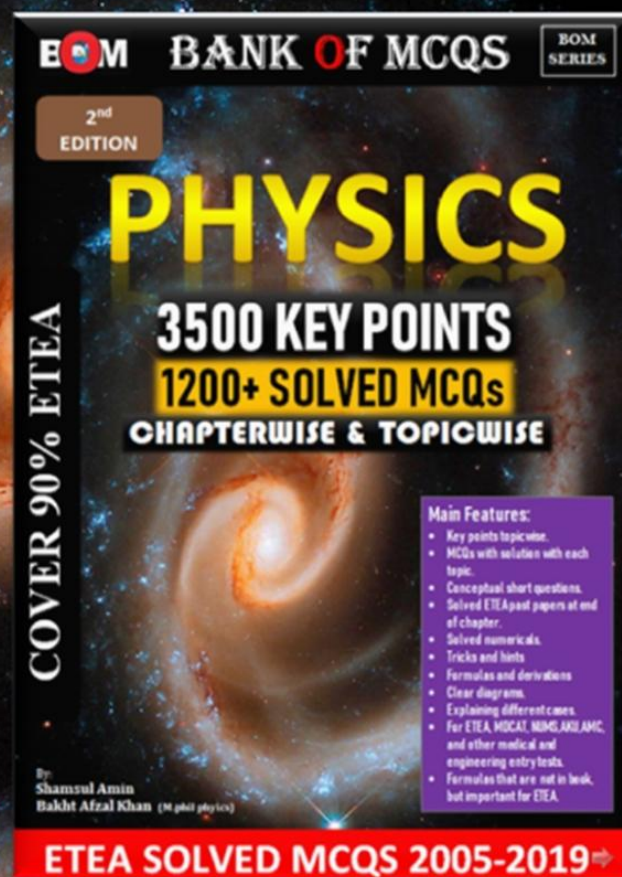
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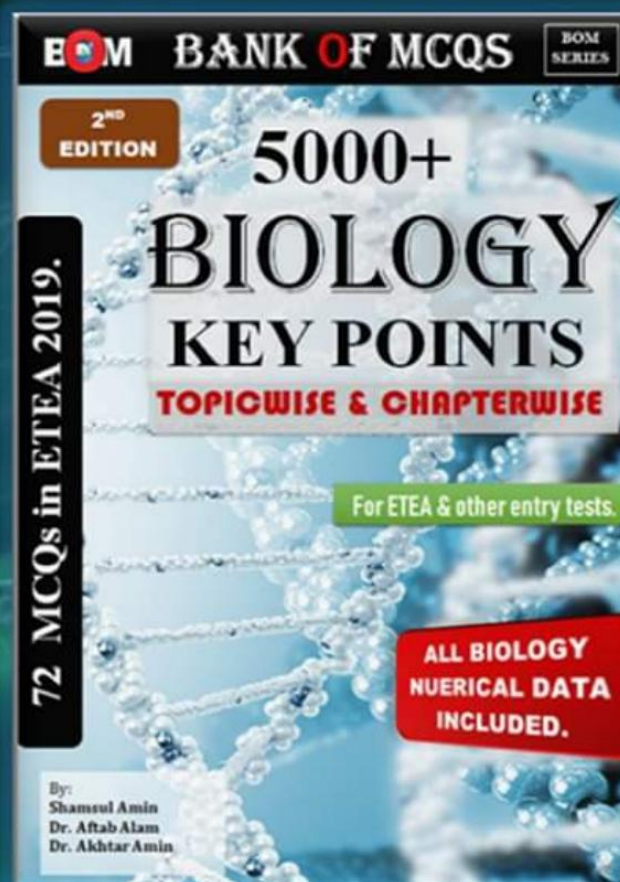
Main Features:

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- ✓ MCQs with solution with each topic.
- ✓ Conceptual short questions.
- ✓ Solved ETEA past papers at end of chapter.
- ✓ Solved numericals.
- ✓ Tricks and hints
- ✓ Formulas and derivations
- ✓ Clear diagrams.
- ✓ Explaining different cases.
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MAIN FEATURES:

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- ✓ To the points
- ✓ 5000 key points
- ✓ 700 numerical data
- ✓ Revise chapter in 10 min.
- ✓ Revise whole subject in single day.
- ✓ New tabular style , so you can learn it easily





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ETEA Medical 2017

1. Which of these locomotor organs would likely be the shortest ?
(a) A flagellum (b) A cilium (c) An extended pseudopod (d) A pellicle

Hint: Cilia are the shortest locomotor organs.

2. In order to see various aspects of specimen a three dimensional image of the object can be produced using:
(a) Compound microscope (b) Dark-field microscope
(c) Transmission electron microscope (d) Scanning electron microscope

Hint: The most advanced microscope are transmission electron microscope (TEM) and scanning electron microscope (SEM). The magnification power up to 1,000,000 (1 million) times. On the other hand the scanning electron microscope can produce three dimensional image of an object used as specimen.

3. In saturated fatty acids more hydrogen are not accommodated because of:
(a) Presence of single bonds between carbon atoms
(b) Presence of Double bonds between carbon atoms
(c) Presence of triple bonds between carbon atoms
(d) Absence of bond between carbon atoms
4. 2-FADH₂ can yield energy:

- (a) 4 ATP (b) 8 ATP
(c) 6 ATP (d) 10 ATP

5. The three non infective genes in HIV are:

- (a) gag, pol, rev (b) gag, pol, vpu
(c) gag, pol, vpr (d) gag, pol, env

6. Which one is not a opportunistic disease related to HIV infection.

- a) Destruction of body immune system
b) Recurrent pneumonia
c) Pulmonary tuberculosis
d) Toxoplasmosis

Hint: Destruction of body immune system is not an opportunistic disease related to HIV infection.

7. If in a situation some bacteria infected by a certain. Phages had somenow developed the ability to make a particular amino acid that was not in their genes before. What would be the possible explanation to this new ability ?

- a) Introduction
b) Transformation
c) Transduction
d) Conjugation

Hint: During transduction some bacteria infected by a certain phages has some how developed the ability to make a particular amino acid that was not in their gene before.



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8. The first organisms that oxygenated the atmosphere:

- (a) Cyanobacteria
- (b) Phototrophic organisms
- (c) Anaerobic organisms
- (d) All of the above

Hint: Cyanobacteria (blue glae) are the phototrophic and anaerobic organisms when oxygenated the atmosphere. Cyanobacteria were involved in the photosynthesis in the early time of earth. Due to their photosynthetic activity. The level of oxygen raised from 1% to 21%.

9. What event is thought to have contributed to the evolution of eukaryotes ?

- (a) Global warming
- (b) Glaciation
- (c) Volcanic activity
- (d) Oxygenation of the atmosphere

Hint: Life on earth for aerobic organisms was impossible in the earth's early life. Because the oxygen concentration in the atmosphere was very low, i.e. about 1% after the evolution of photosynthetic pigments in cyanobacteria their photosynthetic activity increased and the concentration of oxygen in the atmosphere raised to 21%. This event is called oxygenation of the atmosphere and has contributed to the evolution of eukaryotes (aerobic organisms).

10. Rhizobium belongs to:

- (a) Beta-protobacteria
- (b) Gamma-protobacteria
- (c) Alpha-protobacteria
- (d) Delta-protobacteria

Hint: Rhizobium belongs to the sub group alpha proteobacteria. This group includes bacteria which form symbiotic associations with their hosts. Rhizobium forms a symbiotic association with the roots of leguminous plants for the fixation of atmospheric nitrogen (N_2).

11. Poisonous red-tides in coastal areas are caused by the blooms of:
(a) Euglenoids (b) Rhodophyta
(c) Diatoms (d) Dinoflagellates

Hint: In coastal areas poisonous and destructive red tides are caused by great population explosions or blooms of dinoflagellates. Such tides change the colour of water to red.

12. Most conspicuous sea weeds are:
(a) Red algae (b) Blue algae
(c) Green algae (d) Brown algae

Hint: Brown algae are the most conspicuous seaweeds. They are multicellular and their life cycle is marked by alternation of generations between diploid sporophyte and haploid gametophyte. The largest brown algae is also a conspicuous seaweed.

13. One of the following statements is true regarding Basidiomycota:

- (a) They are the most important source of antibiotics
- (b) They have a known sexual stage



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(c) Hyphae fuse to give rise to dikaryotic mycelium

(d) The vast majority of spores are formed asexually

14. The sprouting gametophyte of a moss consists of a filamentous, branched structure called:

(a) Mycelium (b) Hyphae

(c) Protonema (d) Bud

Hint: Protonema is a filamentous, branched structure that forms the earliest stage (Haplod phase) in the life cycle of mosses. When a moss first grows from a spore, it grows as a protonema which develops into a leafy gametophore.

15. Which seedless plant is a renewable source of energy ?

(a) Club mass (b) Horsetail

(c) Sphagnum mass (d) Fern

Hint: Sphagnum moss or peat moss is a renewable source of energy. When peat moss (sphagnum) take up and hold large quantities of water. Sphagnum or peat moss is a renewable source of energy because remains of this moss becomes peat which is widely and extensively used as fuel (energy source).

16. Shagnum is also called as:

(a) Sphenopsida (b) Peat moss

(c) Club moss (d) Maiden hair ferns

17. Double fertilization occurs in:

(a) Pinus (b) Ferns

(c) Marchantia

(d) Maize

Hint: Double fertilization is the characteristics of angiosperms like "maize".

In double fertilization two sperms zygote or oosphere and the other sperm fuses with endospore mother cell to form fusion nucleus.

18. Which of the following nutrient is incorrectly paired with its function in plant?

a) Iron – cytochromes and chlorophyll synthesis

b) Molybdenum – cell permeability

c) Cobalt – required by nitrogen fixers

d) Calcium – formation of cell wall

Hint: Molybdenum (M_0) is involved in nitrogen fixation and nitrate reduction.

19. Macronutrients are:

(a) K-Mg-N-P (b) Cu-Mg-Mn-S

(c) Mn-S-P-Cu (d) Mg-Mn-Ca-P

20. Which cells are responsible for the movement of sugar as per mass flow hypothesis?

a) Tracheids, vessel elements

b) Tracheids, companion cells

c) Vessel elements, companion cells

d) Companion cell, sieve-tubes

Hint: Companion cell and sieve tubes are the cells responsible for the movement of



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sugar as per the pressure flow or mass flow hypothesis.

21. After buying green bananas or unripe avocados, they can be kept in a brown bag to ripen. The hormone released by the fruit and trapped in the bag is probably:

- a) Abscisic acid
- b) Cytokinin
- c) Ethylene
- d) Gibberellic acid

Hint: Ethylene a gaseous hormone is involved in fruit ripening.

22. An acinus is composed of:

- (a) 10-20 Acinars
- (b) 20-40 Acinars
- (c) 20-30 Acinars
- (d) 30-40 Acinars

23. If a new born baby possesses, carboxy hemoglobin instead of oxymoglobin, the condition may be;

- (a) Embolism
- (b) Artherosclerosis
- (c) Cyanosis
- (d) Arteriosclerosis

24. Of 100 ml of Arterial blood, oxygen provided to the tissues is:

- (a) 2 ml
- (b) 3 ml
- (c) 4 ml
- (d) 5 ml

25. Otitis media is an inflammation of which part of the body?

- (a) Brain
- (b) Middle ear
- (c) Lungs
- (d) Urinary tract

Hint: Otitis media is an inflammation of the middle ear.

26. Sarcolemma is the membrane around ?

- a) Bone
- b) Joints
- c) Muscle fiber
- d) Heart

Hint: Each muscle fiber is surrounded by a membrane called sarcolemma.

27. If medulla oblongata of a person brain is damaged which of the following processes will be disturbed?

- (a) Thinking
- (b) Sleep
- (c) Thirst
- (d) Swallowing

Hint: If medulla oblongata of a person brain is damaged special reflexes such as heart beat, respiratory movements, salivary secretions, swallowing, vomiting, coughing and sneezing processes will be disturbed.

28. Nervous system that prepares itself fight of flight:

- (a) Para Sympathetic
- (b) Sympathetic
- (c) Somatic
- (d) Peripheral

29. In which of the following disorder the structure and function of normal spinal cord is damaged?

- (a) Arthritis
- (b) Sciatica
- (c) Spondylosis
- (d)

Hint: Meningitis is characterized by inflammation of the protective membranous covering of the brain and spinal cord the meninges.



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30. The deficiency of calcitonin result in ?

- a) Bone formation
- b) Kidney stone
- c) Hyperthyroidism
- d) Hypothyroidism

31. *Acetabularia mediterranea* is:

- (a) A fungus
- (b) An algae
- (c) A protozoan
- (d) A prokaryote

32. Implantation of embryo takes place in which week of pregnancy?

- (a) 1st (b) 2nd (c) 3rd (d) 4th

Hint: Implantation takes place in the second week of pregnancy.

33. In a mating between two individuals that are heterozygous for a recessive lethal allele. What genotypic ratio (homozygous dominant: heterozygous: homozygous recessive) would you expect to observe in the offspring?

- (a) 1:2:1 (b) 3:1:1
- (c) 1:2:0 (d) 0:2:1

34. If black and white true breeding mice are mated and the result is all gray offspring, what inheritance pattern would this be indicative of?

- (a) Dominance (b) Codominance
- (c) Multiple Alleles
- (d) Incomplete Dominance

35. ABO blood groups are an example of:

- (a) Multiple alleles and incomplete dominance

(b) Codominance and incomplete dominance

- (c) Incomplete dominance only
- (d) Multiple alleles and condominance

36. XX-XY types of sex determination pattern is present in which of the following organisms?

- (a) When 1A moves through a voltage of 1V
- (b) When a power of 1 W is used for 1 s
- (c) When the current

37. The experiments by Hershey and Chase helped confirm that DNA was the hereditary material on the basis of the finding that:

- a) Radioactive phage were found in the pellet
- b) Radioactive phage were found in the supernatant
- c) Radioactive sulfur was found inside the cell
- d) Radioactive phosphorus was found in the cell

Hint: Radioactive phosphorus was found in the cell show that DNA act a a hereditary material.

38. DNA polymerase adds nucleotide .to the 3' end of the primer so the direction of replication will be ?

- (a) 5'to3' (b) 3'to5'
- (c) 3' end of the primer to 3' end of template strand



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(d) 3' end of template strand to the 3' end of the primer

Hint: DNA polymerase III cannot initiate replication process it can add a nucleotide on to a preexisting 3-OH group and therefore needs a primer to perform its polymerase activity. It always adds nucleotide at 3' end of primer so the direction of replication becomes 5' to 3' end.

39. How many nucleotides are 12 mRNA codons?

- a) 12
- b) 24
- c) 36
- d) 48

Hint: Single genetic code consists of 3 nucleotides so mRNA contains 12 codons have 36 nucleotides.

40. Which of the following is a non-sense codon?

- a) UGA
- b) UAU
- c) CAU
- d) GAU

Hint: UGA, UAA and UAG are non-sense codons or stop codons.

41. If a disorder is not present in a child's family but the fetus itself is infected before birth, it is known as?

- a) Somatic mutation
- b) Hereditary mutation

c) Germ line mutation

d) De novo mutation

Hint: Mutation that occurs only in an egg or sperm cell or those that occur just after fertilization is called a new mutation or de novo mutation.

42. What will happen if a nucleotide is deleted from a gene having 9 nucleotides in its transcriptional unit?

- a) Change in phenotype
- b) No change in phenotype
- c) Synthesis of 3 amino acids
- d) Synthesis of 4 amino acids

Hint: Change occurs in phenotype when a nucleotide is deleted from a gene having 9 nucleotides in its transcriptional unit.

43. Identify the mismatch pair in the following.

- a) A) Cyanobacteria- primary producer
- b) Grasshopper- primary consumer
- c) Fungi- decomposer
- d) Zooplankton- secondary consumer

Hint: Zooplankton are primary consumers.

44. Which of the following is a suitable vector to be incorporated with a large external DNA fragment?

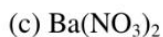
- a) Small size vector
- b) Large size vector
- c) Large size vector with no origin of replication

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58. Considering the molecule orbital theory (MOT) choose the correct relative energies order.
- (a) $\sigma_{1s} < \sigma_{1s}^* < \sigma_{2s} < \sigma_{2s}^* < \sigma_{2p_x} < \pi_{2p_y} = \pi_{2p_z}$
- (b) $\sigma_{1s} < \sigma_{1s}^* < \sigma_{2s} < \sigma_{2s}^* < \pi_{2p_y} = \pi_{2p_z} < \pi_{2p_x} < \sigma_{2p_x}$
- (c) $\sigma_{1s} < \sigma_{1s}^* < \sigma_{2s} < \sigma_{2s}^* < \pi_{2p_x} = \pi_{2p_z} < \pi_{2p_y}$
- (d) $\sigma_{1s} < \sigma_{1s}^* < \sigma_{2s} < \sigma_{2s}^* < \pi_{2p_y} < \pi_{2p_z} < \pi_{2p_x}$
59. A container is having mixture of gases, 20% ammonia, 30% hydrogen and 50% oxygen under 50a.t.m pressure choose the correct partial pressure respectively.
- (a) 10 atm, 25 atm, 15 atm
 (b) 10 atm, 15 atm, 25 atm
 (c) 25atm, 10 atm, 15 atm
 (d) 15 atm, 25 atm, 10 atm
60. At standard conditions 45 liters of oxygen gas weights about 6g, where as 45 liters of hydrogen weights only about 4g. Which gas defuse faster? Calculate how much faster.
- (a) Hydrogen $4\gamma O_2$ (b) Hydrogen $2\gamma O_2$
 (c) Oxygen, $8\gamma Hz$ (d) Oxygen, $3\gamma Hz$
61. Amorphous solids are made by fusing silicates with:
- a) Boric acid
 b) Aluminum oxide
 c) Phosphorus pent oxide
 d) All of the above
- Hint: Science, society relationship
62. Choose the anisotropic behavior
- (a) Coefficient of thermal expansion
 (b) Lattice energy
 (c) Viscosity
 (d) Infrared Spectroscopy
63. The compound with most exothermic lattice energy is:
- a) $CaCl_2$
 b) K_2O
 c) CaO
 d) $BaCl_2$
64. Excess of Ag_2CrO_4 was dissolved in distilled water its solubility was found to be $1.3 \times 10^{-4} \text{ mol dm}^{-3}$ what is the solubility product:
- (a) $K_{sp} = [1.3 \times 10^{-4}]^2 [1.3 \times 10^{-4}]$
 (b) $K_{sp} = [2.6 \times 10^{-4}]^2 [1.3 \times 10^{-4}]$
 (c) $K_{sp} = [1.3 \times 10^{-8}] [1.3 \times 10^{-4}]$
 (d) $K_{sp} = [1.3 \times 10^{-8}]^2 [1.3 \times 10^{-4}]^2$
65. Choose acids that are showing leveling effect.
- i) HCl ii) Hl iii) HCl iv) HF
- a) i & iv
 b) i, iii & iv
 c) iii & iv
 d) i, ii, & iii
- Hint: Leveling effect can be shown by only strong acid. Weak acid can never show leveling effect because they do not completely ionize in water.
66. K_a values of some compound are given below select the correct order of acidic strength:



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Hint: Na_2CO_3 is stable thermally due to greater ionic characters.

75. -----

76. Coordination number six complexes having d^2sp^3 hybridization exist in:

- (a) Tetrahedral shape
- (b) Square planar shape
- (c) Trigonal bipyramidal shape
- (d) Octahedral shape

77. In movies during fighting a blood red solution is using as an artificial blood. Which of the following complex ion is used for this solution ?

- a) $[\text{Fe}(\text{H}_2\text{O})_6]^{+2}$
- b) $[\text{Cu}(\text{NH}_3)_4(\text{H}_2\text{O})_2]^{+2}$
- c) ????????
- d) ????????

Hint: Testing for iron III ions with thiocyanate ions.

78. Arrange the following oxide of chromium in increasing acidic character:

- (a) $\text{CrO} > \text{Cr}_2\text{O}_3 > \text{CrO}_3$
- (b) $\text{CrO}_3 > \text{Cr}_2\text{O}_3 > \text{CrO}$
- (c) $\text{Cr}_2\text{O}_3 > \text{CrO} > \text{CrO}_3$
- (d) $\text{CrO}_3 > \text{CrO} > \text{Cr}_2\text{O}_3$

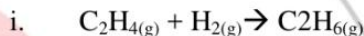
Hint: But question is same what wrong because it is decreasing order of acidity.

79. Many hexaaqua complex ions can undergo reaction with water as given below: The reaction is classed as:

- (a) Redox reaction
- (b) Acid base reaction
- (c) Decomposition reaction
- (d) Substitution reaction

Hint: These are not redox because during reaction no change in oxidative state.

80. Consider the following reactions.



Choose the catalysts employed for the reaction.

- (a) Ni for both the reactions (i) and (ii)
- (b) Fe_2O_3 for both the reactions (i) and (ii)
- (c) Ni for reaction (i) and Fe_2O_3 for (ii)
- (d) Fe_2O_3 for the reaction (i) and Ni for (ii)

81. When compound with undergo substitution reaction faster than benzene?

82. Propene react with hypochlorous acid to form

- (a) (b)
- (c) (d)

83. Alkene + $\text{O}_3 \rightarrow$ Ozonide Zn + H_2O
Propanone + Propanal the IUPAC name of the alkene is:

- (a) Hex-2-ene (b) Hex-3-ene
- (c) 2-methyl pent-1-ene
- (d) 2-methyl pent-2-ene



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84. $\text{KOH}_{(\text{alcoholic})} + \text{CH}_3\text{C}(\text{CH}_3)_2\text{CH}_2\text{Br}_{(i)} \rightarrow$ The reactants in the condition given will undergo:
- Nucleophilic substitution reaction
 - Elimination reaction
 - Nucleophilic addition
 - None of the above

Hint: When double bond is formed there is always E.R.

85. The number of chiral centres in a molecule of 5-bromo 3-chloro hexan-2-ol is /are:

- 1
- 3
- 2
- 5

86. Benzene gives more stable product when undergo:
- Nucleophilic addition reaction
 - Oxidation reaction
 - Electrophilic substitution reaction
 - Electrophilic addition reaction

Hint: Electrophilic substitution products are aromatic and stable.

87. Which group when attached to benzene will increase its reactivity :

- $-\overset{+}{N}HR$
- $-NH_3$
- $-C \equiv N$
- $-COR$

88. The IUPAC name of the compound given below:

- m- nitrobenzene acid
- O- nitrobenzene methanoic acid
- O- nitrobenzoic acid
- None of the above

89. AlBr_3 which is used in the alkylation of benzene possess the properties of:

- A catalyst
- A Lewis Acid
- An electron deficient specie
- All of the above.

90. $\text{OH}^-_{(\text{alcoholic})} + \text{CH}_3(\text{CH}_2)_2\text{Br} \rightarrow$ Product the nature of OH^- in the above reaction is:

- Nucleophile
- Lewis base
- Ligand
- All of the above

91. $\text{CH}_3\text{CH}_2\text{NH}_2 + \text{C}_2\text{H}_5\overset{+}{\text{C}}\text{C}_2\text{H}_5 \rightarrow$ Product

- Schiff's base
- Diazonium salt
- Amide
- Imine + Amide

92. Choose the mercaptans of the following.

93. Four beakers containing ethanol, ethanol, propanone and phenol separately. Aqueous bromine was added to each beaker. A white ppt was produced in one beaker. This beaker contain:

- Ethanol
- Phenol



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- c) Ethanal
- d) propanone

94. The compound which can form hydrogen bond with water is:
a. $\text{CH}_3\text{-O-CH}_3$ b. $\text{CH}_3\text{-CH}_2\text{-OH}$
c. $\text{CH}_3\text{-CH}_2\text{-NH}_2$ d. All of these
95. The oxidation of pent-2-one (2-pentanone) with nascent oxygen gives:
(a) Propanal (b) Propanoic acid
(c) Ethanoic acid (d) Pentanoic acid
96. What is the name of the carboxylic acid given below?
 $\text{HOOC}(\text{CH}_2)_3\text{COOH}$
(a) Propane dioic acid
(b) Pentane dioic acid
(b) Pentane dicarboxylic acid
(d) Propane dicarboxylic acid

Hint: Carboxylic acids containing two carboxylic groups are called diacids (IVPAC).

97. When the sperm count is high, inhibit hormone release increases which:
(a) Inhibits anterior pituitary release of follicle stimulating hormone
(b) Increase anterior pituitary release of follicle stimulating hormone
(c) Inhibit release of luteinizing hormone
(d) Increase release of luteinizing hormone

Hint: When the sperm count is high inhibit release increase and it inhibits anterior pituitary release of FSH and hypothalamic release of GnRH. When sperm count falls inhibin secretion declines steeply because inhibin hormone is produced by the Sertoli cells and serves to control the spermatogenesis at normal rate.

98. Choose the true product of the following reaction?
 $\text{CH}_3\text{C} \equiv \text{N} + 2\text{H}_2\text{O} + \text{HCl} \rightarrow$
(a) $\text{CH}_3\text{COOH} + \text{NH}_3$
(b) $\text{CH}_3\text{COOH} + \text{NH}_4\text{Cl}$
(c) $\text{CH}_3\text{COCl} + \text{NH}_3$
(d) CH_3CONH_2

99. The compound which cannot be hydrolyzed by water is:
(a) $\text{CH}_3\text{-CH}_2\text{-C-Br}$
(b) $\text{CH}_3\text{-C-O-C-CH}_3$
(c) $\text{CH}_3\text{-CH}_2\text{-C-NH}_2$
(d) None of the above

Hint: All the acid derivatives can be converted back into the corresponding acid by hydrolysis.

100. Coagulation of proteins may be caused by:
(a) Heat (b) Change in pH
(c) Heavy metal salts
(d) All of the above

101. What type of hybridization is/ are present in Hex-4-ene-1-yne:

- a. Sp^2 b. Sp
- c. Sp and Sp^2 d. $\text{Sp}, \text{Sp}^2, \text{Sp}^3$

102. The existence of H_2^2 is not possible because



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- (a) It would be disproportion
- (b) It would be radio active
- (c) it violate the Pauli Exclusion principle
- (d) No H – H bond would form

103. Catalytic converter reduces the emission of

- (a) Unburnt hydrocarbons
- (b) CO
- (c) NO
- (d) All of the above

104. Which of the following radiations cannot cause excitation in a molecule:

- (a) Red Colour
- (b) Green Colour
- (c) Ultra Violet
- (d) None of the above

Hint: Only visible light (VIBGYOR) can cause excitation in a molecule.

105. Which ion is stable in aqueous solution?

- a) Sc^{3+}
- b) Li^{2+}
- c) Ba^{3+}
- d) Na^+

Hint: Sc^{3+} has noble gas electronic configuration which is most stable.

106. The compound which can form hydrogen bond with water is:

- a) CH_3-O-CH_3
- b) CH_3-CH_2-OH
- c) $CH_3-CH_2-NH_2$

- d) All of these

107. Which polyatomic anion is unstable in solution.

- (a) BO_2^-
- (b) SnO_3^{2-}
- (c) $S_2O_4^{2-}$
- (d) MnO_4^{2-}

108. Choose the molecule that could not be represented by single electronic structure formula:

- (a) CH_4
- (b) H_2O
- (c) SO_2
- (d) O_2

109. Select the electronic configuration which can form easily (-3) oxidation state:

- (a) $1s^2 2s^2 2p^6 3s^2 3p^1$
- (b) $1s^2 2s^2 2p^6 3s^2 3p^1$
- (c) $1s^2 2s^2 2p^1$
- (d) $1s^2 2s^2 2p^6 3d^2 4p^2$

110. 50.0 cm^3 of a KOH solution is titrated is the phenolphthalein end point with 7.50 cm^3 of 1.0 M HCl , The concentration of KOH.

- (a) 7.5 M
- (b) 0.75 M
- (c) 0.15 M
- (d) 1.5 M

111. Which of the following is an acid?

- (a) OH^-
- (b) PH_3
- (c) HCO_2^-
- (d) SO_2

112. Select the wrong statement about absorption.

- (a) The phenomenon of accumulation of a gas or liquid at the solid surface is called absorption.
- (b) The process of absorption is selective in nature
- (c) Absorption in general increase with increase in temperature
- (d) Absorption increase with decrease in temperature



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Hint: Absorption increase with decrease in temperature.

- 113.** Charge is distributed uniformly on the surfaced of large flat plate the electrical held 2cm from the plate is $30 \frac{N}{c}$ what is the electrical field at 4cm from the plate.
(a) $120 \frac{N}{c}$ (b) $30 \frac{N}{c}$
(c) $15 \frac{N}{c}$ (d) $7.5 \frac{N}{c}$
- 114.** Which polyatomic anion is insatiable?
(a) $B_4B_7^{2-}$ (b) $S_4O_6^{2-}$
(c) $Cr_4O_7^{4-}$ (d) $Cr_2O_4^{2-}$
- 115.** Which experimental technique reduces the systematic error of the quantity being investigated?
(a) Adjusting an ammeter to remove its zero error before mesuering a current.
(b) Measuring several intermodal distances on a standing wave to find the mean intermodal distance.
(c) Measuring the diameter of a wire repeatedly and calculating the average.
(d) Timing a large number of oscillations to find a period.
- 116.** A value of the acceleration of free fall on Earth is given as $(10 \pm 2) \text{ ms}^{-2}$. Which statement is correct.
(a) The vale is accurate but not precise
(b) The value if both precise and accurate
(c) The value is neither presicse nor accurate
(d) The value is precise but not accurate.
- 117.** In a sample electrical circuit the current in a resistor is measured as $(2.50 \pm 0.05) \text{ mA}$. The resistor is marked as having a value of $4.7 \Omega \pm 2\%$. If these values where used to calculate the power dissipated in the resistor, what would be the percentage uncertainty int eh value obtained?
(a) 2% (b) 4%
(c) 6% (d) 8%
- 118.** If $|a| + |b| = |a| - |b|$ for two non zero vectors and than it hodl that
(a) - a and b are perpendicular
(b) - a and b are parallel
(c) a and b are coplanar
(d) a d b are non coplaner
- 119.** The vector P make 120° with x-axis and the vector. Q make 30° with y-axis their resultant is:
(a) $P + Q$ (b) $P - Q$
(c) $\sqrt{P^2 + Q^2}$ (d) $\sqrt{P^2 - Q^2}$
- 120.** The sum of 2 forces acting at a point is 16N. if the resultant force is 8N and its direction is perpendicular to minimum force, then the force is:
(a) 6N and 10N (b) 8N and 8N
(c) 4N and 12N (d) None of the above
- 121.** If x components of a vector is $\sqrt{3}$ and y component is 1, then the angle made by the vector along x axis is:
(a) 60° (b) 30°
(c) 45° (d) 90°
- 122.** A body of mas 2 kg collides with a wall with speed 100 ms^{-1} and



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increased by 4 times, then its period becomes :

- a) 16 s
- b) 12 s
- c) 8 s
- d) 4 s

142. The kinetic energy and potential energy of a particle executing simple harmonic motion will be equal for the displacement (where x_2 is the amplitude)

- (a) $\frac{x_2}{\sqrt{3}}$
- (b) $\frac{x_2}{2}$
- (c) $\frac{x_2}{\sqrt{2}}$
- (d) $x_2\sqrt{2}$

143. The acceleration of free fall on the Moon is one sixth of that on Earth. On earth, it takes time 't' for a stone to fall from rest a distance of 2m. what is the time taken for a stone to fall from rest a distance of 2m on the Moon?

- (a) 6t
- (b) t/6
- (c) $\sqrt[6]{t}$
- (d) $\frac{t}{\sqrt{6}}$

144. A particle executes SHM along a straight line. Its amplitude is A. The potential energy of the particle is equal to the kinetic energy, when the displacement of the particle from the mean position is:

- (a) Zero
- (b) $\pm A/2$
- (c) $\pm A/\sqrt{2}$
- (d) 2A

145. In S.H.M., the fraction of kinetic energy to total energy when

displacement is one-half of the amplitude is:

- (a) $\frac{1}{8}$
- (b) $\frac{1}{2}$
- (c) $\frac{1}{4}$
- (d) $\frac{3}{4}$

146. A wave of amplitude 20mm has intensity I, another wave of the same frequency but of amplitude 5mm has intensity I what is $\frac{I_2}{I_1}$?

- (a) 2
- (b) 4
- (c) 16
- (d) 256

147. In a stationary wave the distance between consecutive antinodes is 25 cm. if the wave velocity is 300 ms^{-1} then the frequency of the wave will be:

- (a) 150 Hz
- (b) 300 Hz
- (c) 600 Hz
- (d) 750 Hz

148. When a ray of light enters a glass slit from air:

- (a) Its wavelength decreases
- (b) Its wavelength increases
- (c) Its frequency increases
- (d) Its frequency decreases

149. The speed of sound in air at 300 m s^{-1} . If the air pressure become 4 times then the speed of the sound will be:

- (a) 150 m s^{-1}
- (b) 300 m s^{-1}
- (c) 600 m s^{-1}

150. Laplace corrected Newton's formula for the velocity of sound in gases, because the sound propagates:

- (a) As longitudinal waves
- (b) Adiabatically
- (c) Isothermally



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- 160.** Before a thunderstorm, the hairs on your head sometimes stand on end. A hair with mass 0.50 mg and charge 1.0 pC is supported by a force due to an electric field. Ignore any forces other than the weight of the hair and the electric force. What is the electric field strength ?
- a) $4.9 \times 10^3 \text{ N C}^{-1}$
 - b) $4.9 \times 10^5 \text{ N C}^{-1}$
 - c) $4.9 \times 10^6 \text{ N C}^{-1}$
 - d) $4.9 \times 10^9 \text{ N C}^{-1}$
- 161.** How much kinetic energy will be gained by an α -particle ion going from a point at 70 V to another point at 50 V?
- (a) 40 eV (b) 40 KeV
 - (c) 40 MeV (d) Zero
- 162.** The potentials of the two plates of a capacitor are +10V and -10V. The charge on one of the plates is 40C. The capacitance of the capacitor is:
- (a) 2 F (b) 4 F
 - (c) 0.5 F (d) 0.25 F
- 163.** A proton is about 1840 times heavier than an electron. When it is accelerated by a potential difference of 1 KV, its kinetic energy will be:
- (a) 1840keV (b) $\frac{1}{1840} \text{ keV}$
 - (c) 1Kev (d) 920KeV
- 164.** When will 1 C of charge pass a point in an electrical circuit?
- (a) When 1A moves through a voltage of 1V
 - (b) When a power of 1 W is used for 1 s
 - (c) When the current is 5 mA for 200 s
 - (d) When the current is 10 A for 10 s
- 165.** The resistance of a device is designed to change with temperature. What is device ?
- (a) A light-dependent resistor
 - (b) A potential divider
 - (c) A semiconductor diode
 - (d) A thermistor
- 166.** A cell of internal resistant 2.0Ω and electromotive force (e.m.f.) 1.5 V is connected to a resistor of resistance 3.0Ω resistor
- (a) 5 V (b) 1.2 V
 - (c) 0.9 V (d) 0.6 V
- 167.** Two lamps are connected in series to a 250 v power supply. One lamp is rated 240 v, 60 w and the other is rated 10 v, 2.5 w. Which statement most accurately describes what happens ?
- a) Both lamps light at less than their normal brightness.
 - b) Both lamps light at their normal brightness.
 - c) That bis time needs a wise uses.
 - d) To using time in a wisely manner.
- 168.** Two lamps are connected in series to a 250 V power supply. One lamp is rated 240v, 60w and the other us rated



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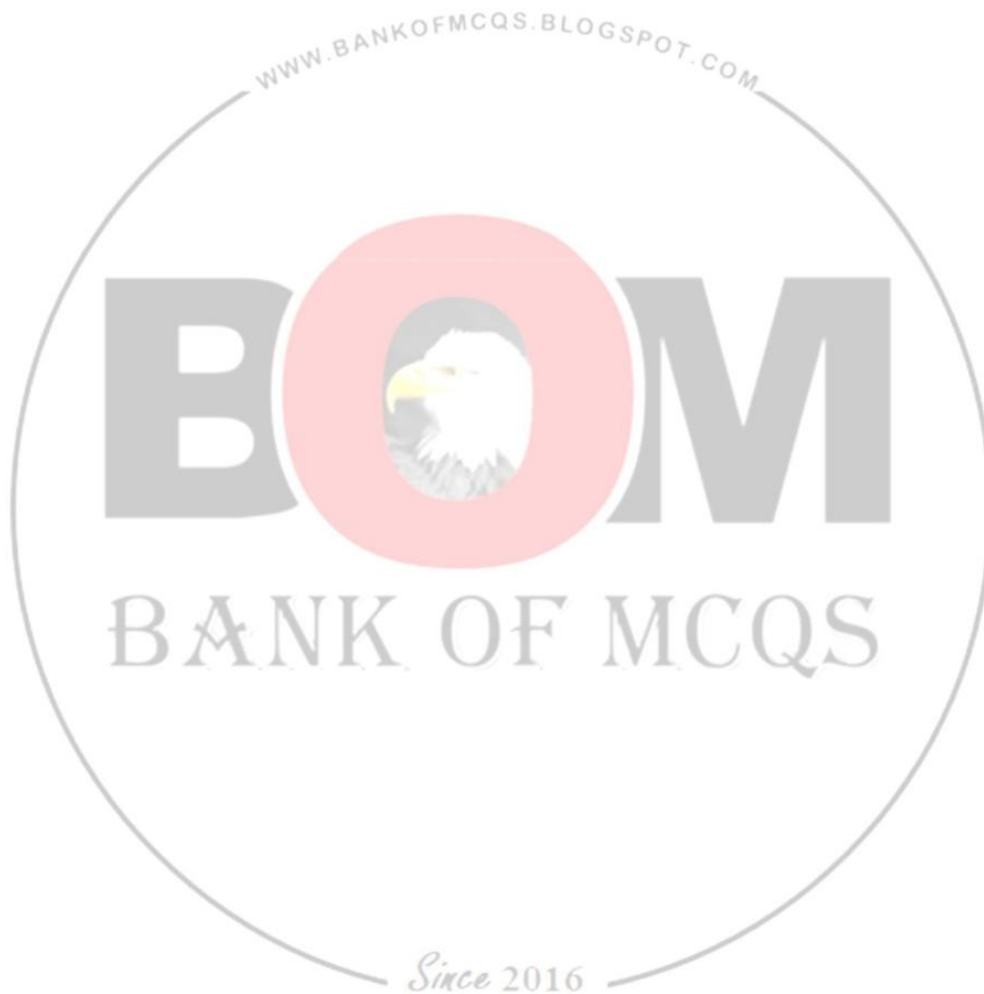
- 10v, 2.5w. which statement most accurately describes what happens?
- Both lamps light at their normal brightness 87.5%
 - Only the 240 V lamp lights
 - $-1.6 \times 10^{19} \text{C}$
 - The 10 v lamp blows
- 169.** A radioactive substance has a half life of 60 minutes. During 3 hours the percentage of the material that decayed would be.
- 12.5%
 - 8.5%
 - I enjoy _____ tennis.
 - to play
 - play
 - 25.1%
- HINT: During 3rd half life decayed substance = 87.5% undecayed = 12.5%.
- 170.** I enjoy _____ tennis.
- To play
 - To playing
 - playing
 - to playing
- 171.** The path _____ paved, so we were able to walk through the path.
- Had been
 - Was
 - Has been
 - Being
- 172.** Choose the correct sentence.
- Naila was so exhausted that on she lain down for a nap.
 - Naila was so exhausted that on she laid down for a nap.
 - Naila was so exhausted that on she was lying down for a nap.
 - Naila was so exhausted that on she will lay down for a nap.
- 173.** He asked me what my name was and what I did.
- He said to me, "what was my name and what did I do?"
 - He said to me, "what is your name and what did you do?"
 - He said to me, "what my name was and what did i do?"
 - He said to me, "what his name was and what did he do?"
- 174.** Choose the correct sentaence.
- How long are you wearing glasses?
 - How long do you wear glasses?
 - How long are you wear glasses?
 - How long have you been wearing glasses?
- 175.** Choose the antonym for the word "ABROGATE".
- Transgress
 - Signify
 - Alleviate
 - Ratify
- 176.** Choose the correct sentence.
- The Village folk were present.
 - The Village folk was present.
 - The Village folks were present.
 - The Village folks was present.
- 177.** While the city has earned record revenue this year _____ will behind in exports.
- It still lag
 - It still lags
 - It lag still
 - It lags still
- 178.** Every person must learn _____.
- That how wisely his time can be used.
 - To make wise his of his time.
 - that his time needs a wise uses.

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(c) Disinterested (d) Healthy

(c) Milk women (d) Milk lady

189. The feminine of MILKMAN is.
(a) Milk girl (b) Milk maid



1. The maximum error in the measurement of mass and length of the side of a cube are 3% and 2% respectively. The maximum error in the measurement of its density will be:

(a) 3% (b) 5% (c) 6% (d) 9%

ANSWER: (d) page No: 12.13,14

2. Which of the following is both unit less and dimensionless:

(a) Angle (b) Solid angle
(c) Mechanical equivalent of heat
(d) Refractive index

ANSWER: (d) Page No: 16 (Sub Topic: 1.9.2)

3. For two vector \vec{a} and \vec{b} it holds that $\vec{a}\vec{b} = |\vec{a}||\vec{b}| \cos \theta$ then it holds $|\vec{a}| = \sqrt{a \cdot a}$ for $\vec{a} = \vec{b}$ if and only if

(a) When \vec{a} and \vec{b} are parallel
(b) When \vec{a} and \vec{b} are perpendicular
(c) When \vec{a} and \vec{b} are in the opposite direction
(d) When \vec{a} and \vec{b} are parallel but opposite direction

HINT: Parallel vectors have equal

ANSWER: (a) Page No: 25 (General Question)

4. Which pair contains one vector and one scalar quantity?

(a) Displacement acceleration

(b) Force kinetic energy

(c) Momentum velocity

(d) Power speed

ANSWER: (b) Page No: 25 (General Question)

5. A car travels a distance s on a straight road in 2 hours and then returns to the starting point in the next 3hour. Its average velocity is:

(a) $\frac{s}{5}$ (b) $\frac{2s}{5}$ (c) $\frac{s}{2} + \frac{s}{3}$ (d) zero

ANSWER: (D) Page No: 54

6. The numerical ratio of displacement to distance is:

(a) Always less than one
(b) Always equal to one
(c) Always more than one
(d) Equal to or less than one

HINT: $\frac{b}{a} \leq 1$

ANSWER: (D) Page No: 54

7. The area under the acceleration time graph represent:

(a) Displacement (b) Velocity
(c) Change in velocity (d) Distance travelled

HINT: $\vec{a} = \frac{\Delta v}{\Delta t}$ $\Delta v = \vec{a} \times \Delta t$

ANSWER: (c) Page No: 57

8. When we kick a stone, we get hurt it happens due to:

(a) Inertia (b) Velocity
(c) Reaction (d) Momentum



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ANSWER: (c) Page No: 62 (Sub Topic: 3.6.3)

9. Angular momentum has the same unit as:
- (a) Impulse x distance
 - (b) Linear momentum x time
 - (c) Work x frequency
 - (d) Power x time

ANSWER: (a) Page No: 64

10. Two bodies of mass m and $4m$ are moving with equal kinetic energies. The ratio of their linear momentum will be:

(a) 1:4 (b) 4:1 (c) 1:2 (d) 2:1

ANSWER: (c) Page No: 63

11. A ball is projected upwards. Its acceleration at the highest point is:
- (a) Zero
 - (b) Directed upwards
 - (c) Directed downward
 - (d) Can't be predicted

ANSWER: (c) Page No: 69

12. A man of mass 60 kg climbs up a 20 m long staircase to the top of a building 10 m high. What is the work done by him: Take $g = 10 \text{ ms}^{-2}$
- (a) 12 KJ
 - (b) 6 KJ
 - (c) 3 KJ
 - (d) None the above

HINT: $W.D = mgh$
 $= 60 \times 10 \times 10 \text{ J}$
 $= 6 \text{ KJ}$

ANSWER: (b) Page No: 90

13. For a body moving with constant

speed in a horizontal circle, which of the following remains constant:

- (a) Velocity
- (b) Centripetal force
- (c) Acceleration
- (d) Kinetic energy

HINT: K.E because it is scalar

$$K.E = \frac{1}{2}m(V,V)$$

ANSWER: (d) Page No: 89

14. The kinetic energy of a body of mass 1 kg and momentum 2Ns is equal to:
- (a) 1J
 - (b) 10J
 - (c) 5J
 - (d) 2J

ANSWER: Page No: 89

15. The unit of gravitational potential is
- (a) Joule
 - (b) Joule / kilogram
 - (c) Joule kilogram
 - (d) Kilogram

HINT: $V = \frac{P.E}{\text{Mass}} = \frac{\text{Joule}}{Rg}$

ANSWER: (b) Page No: 95

16. The angular velocity of a second hand in watch is :

(a) $\frac{\pi}{30}$ (b) 2π (c) π (d) $\frac{60}{\pi}$

ANSWER: (b) Page No: 115

17. A fly wheels rotates at a constant speed of 3000 rpm (rev/min). The angle described by the shaft in radian in one second is:

(a) 2π (b) 30π (c) 100π (d) 3000π

ANSWER: (c) Page No: 115

18. A centripetal force F acts on a body



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26. Two springs of spring constant k_1 and k_2 are stretched by the same force. They are stretched by x_1 x_2 respectively, if $K_1 > K_2$ then:

- (a) $x_1 = x_2$ (b) $x_1 > x_2$ (c)

$x_1 < x_2$

(d) Depends on the length of the spring

HINT: $k \propto \frac{1}{x}$

$K_1 < K_2 \Rightarrow x_1 > x_2$

ANSWER: (b) Page No: 172

27. A spring is stretched by 5 cm. Its potential energy is E. If it is stretched by 10 cm, its potential energy will be:

- (a) 2E (b) 4E (c) 8E (d)

16E

ANSWER: (b) Page No 178 (Sub

Topic: 7.5.1)

28. A sound wave has a speed of 330 m/s and a frequency of 50 Hz. What is a possible distance between two points on the wave that have a phase difference of 60° ?

- (a) 0.03m (b) 1.1m (c) 2.2m
(d) 6.6m

ANSWER: (b) Page No: 202 (Sub

Topic: 8.3.3)

29. A man standing next to a stationary train hears sound of frequency 400 Hz emitted from the train's horn. The train then moves directly away from the man and sounds its horn when it has a speed of 50 m s^{-1} . The speed of sound is 340 m s^{-1} . What is the difference in frequency of the sound

heard by the man on the two occasions?

- (a) 51Hz (b) 69Hz (c) 349Hz
(d) 469Hz

ANSWER: (c) Page No:230 (Sub Topic: 8.15.2)

30. Which one of the following properties of light does not change with the nature of medium?

- (a) Frequency of light
(b) Wavelength of light
(c) Speed of light
(d) All of those

HINT: Frequency does not depend on medium.

ANSWER: (a)

31. Monochromatic green light of wave length 5×10^{-7} illuminates a pair of slits 1mm apart the separation of bright

lines on the interference pattern formed on a screen 2m away is

- (a) 0.25m (b) 0.1mm (c) 1.0mm
(d) 0.01m

ANSWER: (c) Page No: 253

32. Colour fringes observed in soap bubbles are the example of.

- (a) Diffraction (b) Interference
(c) Reflection (d) Refraction

ANSWER: (d) Page No: 257

33. What is correct for all transverse waves?

(a) They all involve the oscillation of atoms

(b) They can all be polarized

(c) They can all travel through a vacuum



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(b) K β characteristic of X-ray

(c) K γ characteristic of X-ray

(d) K characteristic of X-ray

ANSWER: (b) Page No: 53 (Sub Topic: 2.4.2)

57. Select the one having half-filled P orbital's on losing an electron:

(a) Nitrogen (b) Lithium

(c) Oxygen (d) Fluorine

HINT: $0(8) = 1s^2, 2s^2, 2p^4$ on losing 1 electron it becomes $1s^2, 2s^2, 2p^3$

ANSWER: (c) Page No: 65 (Sub Topic: 2.6.4)

58. When a force retards the motion of a body the work done is:

(a) Zero (b) Negative

(c) Positive (d) +ve or -ve depending upon the magnitude of force and displacement

ANSWER: (b) Page No: 84

59. What is the relative rates of diffusion of equal volume (500 cm^3) of hydrogen and oxygen under same condition of temperature and pressure?

(a) 4:1 (b) 8:1 (c) 16:1 (d)

2:1

ANSWER: (a) Page No: 126 (Sub Topic: 4.8.1)

60. Select the correct order in boiling point:

(a) Butanal < 2-Butanol < 2 Methyl-2-propanol

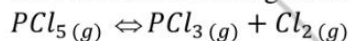
(b) Butanol < 1-Butanol < 2-Methyl-2-propanol

(c) 2-Methyl-2-propanol < 1-Butanol < 2-Butanol

(d) 2-Methyl-2-Propanol < 2-Butanol < 1-Butanol

ANSWER: (d) Page No: 145

61. Consider the following reaction



When K_p at 500K is 0.85 . what will be the value of K_c at the same temperature

$$(a) K_c = \frac{0.85}{0.82 \times 500} \quad (b) K_c = \frac{0.82}{0.85 \times 500}$$

$$(c) K_c = \frac{0.85 \times 500}{0.82} \quad (d) K_c = \frac{0.85}{0.82}$$

HINT: $K_p = K_c (RT)^{\Delta n}$

$$K_c = K_p / (RT)^1$$

ANSWER: (a) Page No: 191 (Sub Topic: 7.1.3)

62. Which of the following is an acid?

(a) OH^- (b) PH_3 (c) HCO_3^-

(d) SO_4^{2-}

HINT: The specie having ionizable H^+ is acid.

ANSWER: (c) Page No: 213

63. The equilibrium constant for the Protolysis of ammonium ion, ($NH_4^+ + H_2O \rightleftharpoons NH_3 + H_3O^+$) is 5.6×10^{-10} at $15^\circ C$. The pH of $1.0 M NH_4Cl$ solution is closet to which of the following.



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(a) 9 (b) 7 (c) 5(d)3

HINT: K_a of $\text{NH}_4^+ = 5.6 \times 10^{-10}$

Molarity = 1 M

$$[\text{H}^+] = \sqrt{K_a \cdot \text{Molarity}}$$

$$[\text{H}^+] = \sqrt{5.6 \times 10^{-10} \cdot 1}$$

$$[\text{H}^+] = 2.35 \times 10^{-5}$$

$$\text{PH} = 4.8 = 5$$

ANSWER: (c)

64. A solution 0.1 M in H_2CO_3 and 0.1 M in NaHCO_3 is made. The pH of the resulting solution should be closest to

Note: H_2CO_3 $\text{P}K_a = 6.37$

- (a) 6.37 (b) 4.35 (c) 6.28
(d) 7.37

HINT: $\text{P}^H = \text{PK}a + 10 \log \frac{(\text{salt})}{(\text{acid})}$

$$\text{P}^H = 6.37 + \log \frac{[0.1]}{[0.1]} \quad \text{P}^H = 6.37 + 0 = 6.37$$

ANSWER: (a) Page No: 224 (Sub Topic: 8.6.2)

65. Solubility of non-polar solute in non-polar solvent is because of:

- (a) Their same molecular sizes
(b) Large difference in molecular sizes of solute and solvent
(c) Weak van der Waal's forces of solvent and solute particles
(d) Both (a) & (c)

HINT: The attractive forces found in the molecules of solute and solvent is

less than the attractive forces in the solute solvent molecules.

ANSWER: (c) Page No: 263 (Sub Topic: 10.1.3)

66. Select completely immiscible pair of liquids:
- (a) Phenol-water system
(b) Trimethylamine and water system
(c) Carbon disulphide and water system
(d) Ethanol and water system

ANSWER: (c) Page No: 264 (Sub Topic: 10.1.3)

67. Select an incorrect statement about collides.
- (a) Colloidal particles carry charges
(b) Addition of electrolytes coagulates the solution
(c) Every substance can be made to behave like lyophobic collides
(d) Every solid substance can be brought to colloidal state

ANSWER: (c) Page No: 261 (Sub Topic: 10.1.1)

68. Molality of 10% w/w NaOH solution is
- (a) 1.5m (b) 2.0m (c) 2.5m (d) 3.5m

HINT: Molality = $\frac{\text{No of moles of solute}}{\text{Kg of solvent}}$

As solute solute = 10g

$$\text{No of moles} = \frac{10}{40} = 0.25 \text{ moles}$$



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Now as solvent = 90g

Solvent (In Kg) = $90/100 = 0.09\text{Kg}$

$$m = \frac{0.25}{0.09} = 27 \text{ molal}$$

ANSWER: (c) Page No: 268 (Sub Topic: 10.2.1)

69. How many grams of $(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ be dissolved in 500cm^3 of distilled water to get 0.1 M solution? (Molecular mass of Mohr's salt is 392)
- (a) 39.2g (b) 3.92g (c) 19.6g (d) 1.96g

$$\text{HINT: } M = \frac{n}{V \text{ in L}}$$

$$\text{When } M = 0.1 \text{ mol/dm}^3$$

$$\text{Vol in L} = 0.5\text{dm}^3$$

$$\text{So } n = 0.1 \times 0.5 = 0.05 \text{ moles}$$

$$\text{Mass (in g)} = 0.05 \times 392$$

$$= 19.6\text{g}$$

ANSWER: (c) Page No: 269 (Sub Topic: 10.2.2)

70. If the force of attraction exists between the particles of dispersed phase and the dispersion medium terms the Sol is called:
- (a) Lyophilic (b) Lyophobic
(c) Hydrophilic (d) Hydrophobic

HINT: Because dispersion medium is moist

water.

ANSWER: (a) Page No: 289

71. Which condition must apply for the

work done by an expanding gas to be $P\Delta V$, where p is the pressure of the gas and ΔV is its change in volume?

- (a) No thermal energy must be supplied to the gas.
(b) The expansion must be at a constant rate.
(c) The pressure must be constant.
(d) The temperature of the gas must be constant.

HINT: Volume expansive is associated with constant pressure i.e $P\Delta V$ occurs at unstable pressure.

ANSWER: (c) Page No: 302

72. Consider the following reaction $\text{PCl}_5(\text{g}) \leftrightarrow \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$

When K_p at 500K is 0.85 . what will be the value of K_c at the same temperature

- (a) $K_c = \frac{0.85}{0.82 \times 500}$ (b) $K_c = \frac{0.82}{0.85 \times 500}$
(c) $K_c = \frac{0.85 \times 500}{0.82}$ (d) $K_c = \frac{0.85}{0.82}$

ANSWER: (d) Page No: 322

73. Calculate E^0 cell from the half-cell reactions: $\text{Zn} \rightarrow \text{Zn}^{+2} + 2e^-$ $E_{\text{red}}^0 = -0.76\text{v}$ or

$$E_{\text{ox}}^0 = +0.76\text{v}$$



- (a) 1.10v (b) 1.20v (c) 1.0v (d) 1.40v

ANSWER: (a) Page No: 339 (Sub Topic: 12.6.2)

74. Choose the wrong statement.



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81. Complexes exist in various coordination numbers, choose the coordination number which is less common:

- (a) 2 (b) 4 (c) 5 (d) 6

HINT: 4 Co-ordinated complex are for less common.

ANSWER: (b) Page No: 57 (Sub Topic: 14.2.3)

82. Choose the correct name of the complex $K_2[PtCl_6]$

- (a) Potassium hexa chloroplatinum (IV)
(b) Potassium hexa chloroplatinate (VI)
(c) Potassium hexa chloroplatinate (IV)
(d) Potassium chloro platinate

ANSWER: (b) Page No: 55 (Sub Topic: 14.2.2)

83. Most solutions containing ferric ions are usually yellow or yellowish brown, this is due to the formation of

- (a) $[Fe(H_2O)_6]^{3+}$ (b) $[Fe(H_2O)_5OH]^{3+}$
(c) $[Fe(H_2O)_3(OH)_2]^+$ (d) $[Fe(H_2O)_3(OH)_3]^0$

ANSWER: (d) Page No: 74 (Sub Topic: 14.3.4.4)

84. Choose the mineral which is not of chromium

(a) Chrome iron stone (b) Chrome ochre

- (c) Cordite (d) Chalcodite

ANSWER: (d) Page No: 62 (Sub Topic: 14.3.2)

85. Compounds of vanadium exist in the following oxidation states 5+, 4+, 3+, 2+ The compounds in the 3+ and 2+ oxidation states behave as

- (a) Good oxidizing agent
(b) Good reducing agent
(c) Weak oxidizing agent

ANSWER: (b) Page No: 60 (Sub Topic: 14.3.1.1)

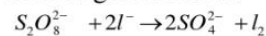
86. The following dynamic equilibrium exist between CrO_4^{2-} ions in solution



- (a) Equilibrium shifts to the right
(b) $Cr_2O_7^{2-}$ is decomposed to CrO_4^{2-}
(c) Equilibrium remains unaffected
(d) Equilibrium shifts to the left

ANSWER: (d) Page No: 63 (Sub Topic: 14.3.2.2)

87. The reaction between peroxodisulphate ions and iodide ions is given below:



- (a) Ni^{2+} (b) Fe^{2+} & Fe^{3+}
(c) Fe^{3+} (d) Fe^{2+}

HINT: The catalyst may be iron II or iron III.

ANSWER: (b) Page No: 72,73 (Sub Topic: 14.3.4.3)

88. To differentiate between the white ppt of AgCl and off white ppt of



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AgBr we use:

- (a) Dil. Solution of NaOH
- (b) Dil. Solution of $\text{Pb}(\text{NO}_2)_2$
- (c) Dil. Solution of NH_3
- (d) Dil. Solution of FeCl_3

HINT: AgCl is soluble in Dil solution of NH_3 while AgBr is insoluble in dil. Solution of NH_3 .

ANSWER: (c) Page No: 101

89. The compound that can not undergo addition reaction is:
- (a) Cyclopropane
 - (b) Benzene
 - (c) Butyne
 - (d) None of these

HINT: Cyclopropane undergo ring opening to give open chain addition product.

ANSWER: (d) Page No: 122 (Sub Topic: 16.2.4)

90. Choose the correct statement about cycloalkanes:
- (a) Cyclopropane and cyclobutane are liquids at room temperature
 - (b) Cycloalkanes are insoluble in ethanol and ether but insoluble in water
 - (c) Their melting and boiling points show a gradual increase with increasing molecular weight.
 - (d) Both b and c are correct
- HINT: Cycloalkanes are insoluble in water but dissolve in ethanol and ether.

ANSWER: (c) Page No: 120 (Sub Topic: 16.2.2)

91. The less energetic and more stable compound among the following is:

- (a) Cyclobutane
- (b) Her I ene
- (c) Cyclopropane
- (d) Propene

ANSWER: (b) Page No: 122

92. Choose the least stable of the following butenes:

- (a) 1-Butene
- (b) Cis-2-Butene
- (c) Trans-2-butene
- (d) Iso butylene

HINT: Heat of hydrogenation is greater than

all.

ANSWER: (a) Page No: 129 (Sub Topic: 16.5.2)

93. The carbon-carbon triple bond length in acetylene is

- (a) 1.09 \AA
- (b) 1.119 \AA
- (c) 1.39 \AA
- (d) 1.19 \AA

ANSWER: (d) Page No: 146 (Sub Topic: 16.7.3)

94. Silver acetylide in dry condition is highly explosive, it reacts with nitric acid to form:

- (a) Silver oxide, carbon dioxide and water
- (b) Silver nitrate and ethyne
- (c) Silver nitrate ethane
- (d) Silver nitrate and carbon dioxide

ANSWER: (b) Page No: 145 (Sub Topic: 16.7.7)

95. Silver mirror is given by :

- (a) Aldehyde
- (b) Ketone
- (c) Ethers



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123. Which of the following is not an adjective?

- (a) Bravery (b) Intelligent
(c) Beautiful (d) Honest

ANSWER: (a)

124. Katherine made her children _____ chores on Sunday

- (a) make some (b) take some
(c) do some (d) does some

125. The people who are hardworking always succeed. The underlined part of the sentence is

- (a) Non defining clause (b) Phrase
(c) Defining clauses (d) Adjective clause

ANSWER: (b)

126. Hussain suffer from no _____ about his capabilities

- (a) Doubts (b) Hallucinations
(c) Illusion (d) Imaginations

ANSWER: (c)

127. People claim to have seen the suspect in several cities.

- (a) The suspect was claimed to be seen by the people in several cities.
(b) The suspect is claimed to have been seen in several cities.
(c) The suspect has claimed to be seen by the people in several cities.

(d) The suspect is being claimed to be seen in several cities by the people.

ANSWER: (b)

128. The antonym for the word "ACQUIT" is:

- (a) Retreat (b) Convict
(c) Conceal (d) Deprive

ANSWER: (b)

129. She said "I passed the examination long ago"

- (a) She said that she had passed the examination long ago
(b) She said that she had passed the examination long before.
(c) She told she had passed the examination long before
(d) She asked that she had passed the examination long ago (b) (c) (d)

ANSWER: (b)

130. $\sum_{j=2}^{10} \frac{1}{j} - \sum_{j=1}^8 \frac{1}{j+2}$

- (a) Zero (b) $\frac{9}{10}$ (c) $\frac{1}{2}$ (d) $\frac{1}{10}$

ANSWER: (c)

131. A sequence is a function whose domain is

- (a) Real numbers (b) Natural numbers

(c) Integers (d) Positive

ANSWER: (b)



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132. $\frac{1}{6!} + \frac{2}{7!} + \frac{3}{8!} =$
(a) $\frac{6}{8}$ (b) $\frac{6!}{8!}$ (c) $\frac{75}{8!}$ (d) $\frac{6}{2!}$

ANSWER: (c)

133. Non-negative constraints in a Linear problem is given by

- (a) $x > 0, y < 0$ (b) $x \geq 0, y \geq 0$
(c) $x = 0, y = 0$ (d) $x \leq 0, y \leq 0$ ANSWER: (b)

134. The objective function in a linear programming is usually denoted by

- (a) $f(x, x) = ax$
(b) $f(x, y) = ax + by, a, b \in R$
(c) $f(x, y) = (ax)(by)$
(d) $f(x, y) = ax + by + cz$

ANSWER: (b)

135. A cone is 9 cm high and has a vertical angle of 60° then the diameter of its base is:

- (a) $3\sqrt{3}$ (b) $6\sqrt{3}$ (c) $9\sqrt{3}$ (d) $18\sqrt{3}$

ANSWER: (b)

136. In an equilateral triangle the ratio 1 : 2 : 3 holds for

- (a) $r_1 : r : R$ (b) $r : R : r$
(c) $r : r_1 : R$ (d) $r_1 : R : r$

HINT: Page No: 346 1st year Book.

ANSWER: (b)

137. Graph of the function $y = \sin x$ over the interval $(0, 2\pi)$ intersects the x-axis at

- (a) One point (b) Two points (c) Three points (d) Infinite points

ANSWER: (a)

138. Which of the following expresses periodic property

- (a) $\sin(-\theta) = -\sin \theta$
(b) $\sin(\theta \pm 2\pi) = \sin \theta$
(c) $\sin(\theta - \pi) = -\sin \theta$
(d) $\sin(\pi - \theta) = \sin \theta$

HINT: periodic property.

$$F(x + k) = f(x)$$

ANSWER: (b)

139. If $f(x) = \begin{cases} +k(x+1), & \text{if } x \leq 0 \\ k(1-x^2), & \text{if } x > 0 \\ 0, & \text{if } x = 0 \end{cases}$ then if $f(2) = 5, k =$

- (a) 0 (b) $\frac{5}{3}$ (c) $\frac{-5}{3}$ (d) 5

ANSWER: (b)

140. $\frac{d}{dx}(\ln|x|) = \frac{1}{x}$ then $\int \ln x dx =$

- (a) $\frac{1}{x}$ (b) $x \ln x$
(c) $x \ln x - 1$ (d) $x \ln x - x$

ANSWER: (d)

141. Equation of a line parallel to Negative y-axis at a distance b units to the left of y-axis is given by:

- (a) $x = b$ (b) $x = -b$ (c) $y + b = 0$
(d) $y = -b$

ANSWER: (b)

142. The point $p(x_1, y_1)$ lies above the line $ax + by + c = 0$. If



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ANSWER: (a)

150. $\lim_{(x,y) \rightarrow (-1,1)} f(x,y) = \frac{x^2}{x^2 + y^2 + 2}$ is
(a) $\frac{1}{4}$ (b) $-\frac{1}{4}$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

ANSWER: (a)

151. For the function $f(x, y, z) = x y z \sin(xyz)$,
 $\frac{d}{dx}(1.1, \frac{\pi}{2}) =$ _____

- (a) $\frac{\pi}{2}$ (b) $\frac{3\pi}{2}$ (c) π (d) 1

ANSWER: (a)

152. For a continuous function $f(x)$ on $[a, b]$ the approximate root lies in the interval $[c, b]$ if
(a) $f(x)$ has opposite signs at $x = a$ $x = b$

- (b) $f(x)$ has opposite signs at $x = a$ $x = c$

- (c) $f(x)$ has opposite signs at $x = a$ $x = b$

- (d) $f(x)$ has opposite signs at $x = c$ $x = b$

ANSWER: (d)

153. Degree of the homogenous function $f(x,y) = \frac{\sqrt{x} + \sqrt{y}}{x+y}$ is:

- (a) 1 (b) Zero (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

ANSWER: (c)

154. The asymptotes of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is given by

- (a) $y = \pm \frac{b}{a}x$ (b) $y = \pm \frac{a}{b}x$

- (c) $y = \pm \frac{c}{a}x$ (d) $y = \pm \frac{a}{c}x$

ANSWER: (a)

155. $ady + by \sin x dx = 0$ is

- (a) Linear differential equation

- (b) Homogeneous differential equation

- (c) Separable differential equation

- (d) Non Separable differential equation

ANSWER: (a)

156. $\frac{k!}{(k+1)!} =$ _____

- (a) $(k+1)$ (b) k (c) $\frac{1}{k}$ (d) $\frac{1}{k+1}$

ANSWER: (d)

157. If A and B are disjoint events, then $P(A \cup B) =$

- (a) $P(A) + P(B)$ (b) $P(A) + P(B) - P(A) \cap (B)$

- (c) $P(A) \cup P(B)$ (d) $\frac{n(A \cup B)}{n(S)}$

ANSWER: (a)

158. ${}^n P_r =$ _____

- (a) ${}^n P_r$ (b) ${}^{n+1} P_r$ (c) ${}^{n+1} P_{r-1}$ (d) ${}^n P_{r+1}$

ANSWER: (a)

159. For two vector \vec{a} and \vec{b} it holds that $\vec{a} \cdot \vec{b} = |\vec{a}| |\vec{b}| \cos \theta$ then it hold $|\vec{a}| = \sqrt{a}$, a for $\vec{a} = \vec{b}$ if and only if.

- (a) When \vec{a} and \vec{b} are parallel



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- (b) When \vec{a} and \vec{b} are perpendicular
(c) When \vec{a} and \vec{b} are in the opposite direction
(d) When \vec{a} and \vec{b} are parallel but opposite direction

ANSWER: (a)

160. The 3rd term of the expression $\frac{n^2-2}{n}$ is

- (a) $\frac{7}{3}$ (b) $\frac{7}{3}$ (c) 3 (d) 1

ANSWER: (a)

161. The angular momentum of a wheel change from 2L to 5L in 3 seconds the magnitude of the torque, acting on it is:

- (a) $\frac{L}{5}$ (b) $\frac{L}{3}$ (c) $\frac{L}{2}$ (d) L

ANSWER: 0

162. if $y = \cos e c^{-1}(e^{-x})$ then $\frac{dy}{dx} =$ _____

- (a) $\frac{e^{-x}}{\sqrt{e^{-2x}-1}}$ (b) $\frac{-e^{-x}}{\sqrt{e^{-2x}-1}}$
(c) $\frac{+1}{\sqrt{e^{-2x}-1}}$ (d) $\frac{-1}{\sqrt{e^{-2x}-1}}$

ANSWER: (d)

163. Let $f(x)$ be a differentiable function on (a, b) if then if (x) is strictly decreasing on (a, b) if

- (a) $f'(x) > 0$ for $a < x < b$
(b) $f'(x) < 0$ for $a < x < b$
(c) $f'(x) = 0$ for $a < x < b$
(d) $f'(x) \leq 0$ for $a < x < b$

ANSWER: (b)

164. If $f(x)$ has a critical value at $x = c$ i.e

$f'(c) = 0$ and $f''(x) = 0$ exists on (a, b) containing C then $f''(c) = 0$ provided that

(a) Function has maximum value at $x = c$

(b) Function has a minimum value at $x = c$

(c) Function has no minimum value or minimum at $x = c$

(d) Function is undefined at $x = c$

ANSWER: (c)

165. $Z = f(x, y) = \frac{x^3 e^{y/x}}{y} - 3 \frac{y^2}{x} \sqrt{x^2 y^2}$ is

homogeneous of degree

- (a) 0 (b) 1 (c) 2 (d) 3

ANSWER: (b)

166. The equation of directrix for the parabola $y^2 = -4px$ is

- (a) $y = -p$ (b) $y = p$

- (c) $x = -p$ (d) $x = p$

ANSWER: (d)

167. The angle of the tangent line $x - y = 0$ to a curve $y = f(x)$ is

- (a) 30° (b) 45° (c) 60°
(d) 0

ANSWER: (b)

168. The line $2x - y + c = 0$ will touch the ellipse $\frac{x^2}{3} + \frac{y^2}{4} = 1$ if $c =$ _____

- (a) ± 4 (b) ± 7 (c) ± 9 (d) ± 11

ANSWER: (a)

169. Let $\vec{G}(t) = t\vec{i} - (t+1)^2\vec{j} + t^{-1}\vec{k}$



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the Domain of the vector function

$\vec{G}(t)$ is

- (a) All value of t
- (b) Only non-negative value of t
- (c) All positive values of t
- (d) All values except t = 0

ANSWER: (d)

170. The order of steepness of lines

$L_1: y - x + 3 = 0, L_2: y - \frac{1}{3}x - 5, L_3: y - 0.3x + 6$ is

- (a) L_1, L_2, L_3
- (b) L_2, L_3, L_1
- (c) L_3, L_2, L_1
- (d) L_1, L_3, L_2

ANSWER: (c)

171. The point A (4,5) is above the line:

- (a) $3x - 7y - 15 = 0$
- (b) $3x - 7y + 15 = 0$
- (c) $3x + 7y - 15 = 0$
- (d) $3x + 7y + 15 = 0$

ANSWER: (c)

172. If $x + iy = (5 - 3i)^3$, then x =

_____ and y = _____

- (a) (10, 198)
- (b) (10, -198)
- (c) (-10, +198)
- (d) (-10, -198)

ANSWER: (b)

173. $|Z| = |-Z|$ for a complex number Z, if and only if it hold that (i) $Z = -Z$

(ii) $Z = \bar{Z}$ (iii) $Z = -\bar{Z}$ (a) Only (i) holds

(b) (i) and (ii) both holds

(c) (i), (ii) and (iii) holds

(d) Either (i) or (ii) holds

ANSWER: (d)

174. If $A = \begin{bmatrix} 2 & \lambda \\ 3 & 1 \end{bmatrix}$ is a non singular matrix, then λ can takes all the real values except for

- (a) 0
- (b) $\frac{2}{3}$
- (c) $-\frac{2}{3}$
- (d) $\frac{3}{2}$

ANSWER: (b)

175. If $\frac{\theta}{2}$ lies in the 3rd or 4th quadrant, then

$\sin \frac{\theta}{2} =$

- (a) $\sqrt{\frac{1+\cos \theta}{2}}$
- (b) $\sqrt{\frac{1-\cos \theta}{2}}$
- (c) $-\sqrt{\frac{1-\cos \theta}{2}}$
- (d) $\pm \sqrt{\frac{1-\cos \theta}{2}}$

ANSWER: (d)

176. If $\theta < \pi$, then the relation between $\frac{\theta}{2}$ and $\frac{\pi}{2}$ is given by

- (a) $\frac{\theta}{2} = \frac{\pi}{2}$
- (b) $\frac{\theta}{2} < \frac{\pi}{2}$
- (c) $\frac{\theta}{2} > \frac{\pi}{2}$
- (d) $\frac{\theta}{2} \leq \frac{\pi}{2}$

ANSWER: (b)

177. $\frac{\cos 5\theta + \cos 3\theta}{\sin 5\theta - \sin 3\theta}$

- (a) $\sin 2\theta$
- (b) $\cos 8\theta$
- (c) $\cot \theta$
- (d) $\tan \theta$

ANSWER: (a)

178. If $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$ for two non zero vectors \vec{a} and \vec{b} then it holds that

(a) \vec{a} and \vec{b} are perpendicular

(b) \vec{a} and \vec{b} are parallel

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(c) \vec{a} and \vec{b} are coplanar

(d) \vec{a} and \vec{b} are non coplanar

ANSWER: (a)

179. Let $(f \circ g)(x) = \sqrt{x^2 + 1} - 1$ and $g(x) = x^2 + 1$ then $f(4) =$

(a) 1 (b) -1 (c) 2 (d) -2

ANSWER: (a)

180. $\frac{d}{dx}(\operatorname{cosec}^{-1} x) =$ _____ when $x < 0$

(a) $\frac{1}{x\sqrt{x^2+1}}$ (b) $\frac{-1}{x\sqrt{x^2-1}}$ (c) $\frac{-1}{x\sqrt{1-x}}$

(d) $\frac{1}{x\sqrt{1+x^2}}$

ANSWER: (d)



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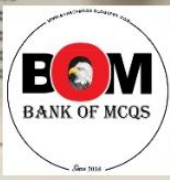
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ENGINEERING 2016

S. No	MCQs	
1.	A person walks 10km north, 20km east and 10km south, then the resultant displacement is: a) 10 km north-east b) 20 km north-east c) 20 km est. d) 20 km west Hints: c) So st= 20 km east	a) $-\frac{2}{13} + \frac{3}{13}i$ b) $\frac{2}{13} - \frac{3}{13}i$ c) $-\frac{2}{13} - \frac{3}{13}i$ d) All of the above Hints: a)
2.	The sum of magnitudes of two forces in 16 N. The result an force is 8 N and its direction is perpendicular to minimum force, then forces are: a) 6 N & 10 N b) 8 N & 8 N c) 4 N & 12 N d) 2 N & 14 N Hints: a) $H = \sqrt{b^2 + p^2}$ H= 10 N So 6N & 10N	5. A square matrix $A = [a_{ij}]$ is called a diagonal matrix if: a) $a_{ij} = 0$ for $i = j$ b) $a_{ij} = 0$ for $i \neq j$ c) $a_{ij} \neq 0$ for $i = j$ all of the above hints: b)
3.	If $\vec{A} = \vec{B}$, then what is the angle between $A+B$ and $A- B$? a) 0° b) 45° c) 60° d) 90° Hints: d) it means that $\vec{A} - \vec{B} = 0$ $\vec{A} + \vec{B} = c$ So the anglw b/w $\vec{A} - \vec{B}$ and $\vec{A} + \vec{B}$ is zero.	6. If $(x,y) = \sin xy$ then $f_y =$ a) $\cos xy$ b) $x \cos xy$ c) $-x \cos xy$ d) $xy \cos xy$ Hints: b)
4.	Multiplication invers of $-2-3i$ is:	7. Consider the following action involved in the manufacture of urea: $\text{CO}_2 + 2\text{NH}_3 \rightarrow \text{NH}_2\text{COONH}_4$ if 22.0 g of CO_2 react with 34 g of ammonia to form ammonium carbonate, the reaction is taken as irreversible and go to completion. Identify the limiting reagent and the amount of carbonate formed: a) $\text{CO}_2, 78_g$ b) $\text{NH}_3, 78_g$ c) $\text{CO}_2, 39_g$ d) $\text{NH}_3, 39_g$ Hints: c)
		8. When hydrogen gas is enclosed in a discharge tube using low pressure, it emits: a) Green light



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d) 750 Hz

Hints: c) $A^1 = \frac{a}{2}$

$V = f\lambda$

$F = \frac{v}{\lambda}$

24. Speed of a vector function:

$V = 2i - 3k + 4k$ is:

a) 5

b) 29

c) 1

d) $\sqrt{29}$

Hints: d)

$v = \sqrt{v_x^2 + v_y^2 + v_z^2}$

25. If $f(x)$ is integrable on the interval (a, b) and has indefinite integral then:

$F(x) \int_a^b f(x) dx =$

a) $F(b) - F(a)$

b) $\int_a^b f(x) dx =$

c) $\{F(a) - F(b)\}$

d) All of the above

Hints: a)

26. The estimated value of circumference of a circle with radius, $r = 5/11$ cm, is:

a) $10/7$

b) $20/7$

c) $7/5$

d) $5/7$

Hints: a)

27. Choose the macronutrient, mineral essential for life:

a) Zinc

b) Calcium

c) Manganese

d) Iodine

Hints: b)

28. Secondary structure of proteins is elucidated by which of the following

technique?

a) Infrared spectroscopy

b) NMR spectroscopy

c) X-ray diffraction technique

d) All of the above

Hints: c)

29. Ethanol reacts with $K_2Cr_2O_7$ and H_2SO_4 to give:

a) CH_3CH_2COH

b) CH_3CH_2COK

c) CH_3COH

d) $CH_3CH_2H_2O_4$

Hints: c)

30. Choose the correct sentence.

a) I go outside and looked in at the field.

b) I went outside and look out at the field.

c) I went outside and looking out in the field.

d) I went outside and looked out at the field.

Hints: d)

31. If two bulbs 25W and 100 W respectively, each rated at 220 volts are connected in series with the supply of 440 volts. Which of the bulb will fuse?

a) 100W bulb

b) 25 W bulb

c) Both a) and b)

d) None of the above

Hints: b)

32. In 10 minutes 3000 coulomb of free electrons enter one end of a conductor and 300 coulomb leave the other end. The current is:

a) 5A

b) 10A



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Hints:

66. If $f(x,y)$ is a given function, then

$$\lim_{\Delta y \rightarrow 0} \frac{f(x,y+\Delta y) - f(x,y)}{\Delta y} =$$

- a) f_x
- b) f_y
- c) $d^2y/dx^2 + 2xdy/dx + y = 3$
- d) $d^2y/dx^2 + 4y(dy/dx) + y = \cos x$

Hints:

67. The stability of colloidal system depends on:

- (a) Charge on the particle (b) Solvation
- (c) Brownian motion (d) All of the above

Hints:

68. Atomic size of xenon is larger than Neon. Considering the London dispersion forces which one of the following is true.

- (a) Neon molecules have weaker London dispersion forces
- (b) Xenon molecules have weaker London dispersion forces
- (c) Xenon and Neon have almost same London dispersion forces
- (d) Xenon have lower boiling point than neon

Hints:a)

69. The compound $Y BaCu_3 O_3$ consists of:

- (a) Cu(I) and Cu(II) Captions
- (b) Cu(II) and Cu(III) Captions
- (c) Cu (III) and Cu(IV) Captions
- (d) Cu(II) and Cu(IV) Captions

Hints:b)

70. Abid is _____ in his field; no other contemporary scientist commands the same respect.

- (a) Disparaged (b) Ignominious

(c) Intelligent (d) Preeminent

Hints:b)

71. A science museum designs an experiment to show fall of a feather in a vertical glass vacuum tube. time of fall from rest is too close to 0.5 s. What le of tube is required?

- (a) 1.3 m (b) 2.5 m (c) 5.0 m (d) 10.0 m

Hints:

72. When will 1C of charge pass a point in an electrical circuit?

- (a) When 1A moves through a voltage of 1V
- (b) When a power of 1W is used for 1s
- (c) When the current is 5mA for 200s
- (d) When the current is 10 A for 10s

Hints: $Q = it$

73. The intensity of beam of monochromatic light is double, which of the following represent the corresponding change if the intensity of the monochromatic beam of light is double then the corresponding change in momentum of each photon will be:

- (a) Increased (b) Double (c) Same
- (d) Halved

Hints: c)

74. Let n be the unit vector orthogonal to both

a and b then $n \cdot (a \times b)$

Hints:c)



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school tomorrow
(d) He probably won't come to school tomorrow
Hints: c)

111. A piston in a gas supply pump has an area of 500 cm² and it moves a distance of 30cm during one stroke. The pump moves the gas against a fixed pressure of 4000 Pa. How much work is done by the piston during one stroke?

- (a) 60 J
- (b) 6.0 x 10³J
- (c) 6.0 x 10⁵ J
- (d) 6.0 x 10

Hints:
 $w = pdv$
 $w = PA.S$

112. A 0.50-kg block attached to an ideal spring with a spring constant of 80N/m oscillates on a horizontal frictionless surface. The total mechanical energy is 0.12 J. the greatest speed of the block is:
(a) 0.15m/s (b) 0.49m/s (c) 0.69m/s (d) 1.46m/s

Hints:
 $v = \frac{k}{m} (r^2 - x^2)$
 $v = \frac{2}{m} \times \frac{k}{2} (r^2 - x^2)$
 $v = \frac{2}{m} (E)$

113. Two trailers, X with mass 500 kg and Y with mass 2000 kg, are being pulled at the same

speed. The ratio of the kinetic energy of Y to that of X is:
(a) 1:1 (b) 2:1 (c) 4:1 (d) 9:1
Hints:

114. The approximate solution of a function $y = f(x)$ lies in the interval (a, b) if:
(a) $f(a)f(b) > 0$
(b) $f(a) < 0$
(c) $f(a)f(b) < 0$
(d) $f(b) = 0$

Hints:

115. The multiplicative inverse of $Z = (-1, 1)$ is:
(a) 12
(b) 11,22
(c) 12
(d) 11,22
Hints:

116. If $125a^8, 2r^5, n7^x$, then na^x ?
(a) 16625
(b) 8125
(c) 62516
(d) 16125
Hints:

117. Grain spirit is:
(a) Isopropyl alcohol (b) Isobutyl alcohol
(c) n-propyl alcohol (d) Ethyl alcohol
Hints: d)

118. Pickup the Arrhenius acid or Base:
(a) BF₃
(b) NH₃
(c) AlCl₃
(d) None of the above
Hints: d)



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119. In auto mobiles ethylene glycol is used to prevent:
(a) Freezing of water in cold winter
(b) Boiling of water in hot summer
(c) Drying up radiator (d) Both (a) & (b)
Hints: d)
120. Chose the word most similar in meaning to the capitalized word —IGNOMINY!:
(a) Dishonor (b) Enthusiasm (c) Besiege (d) Contrary
Hints: a)
121. In the equation $d \sin \theta = m \lambda$ for the lines of a diffraction grating m is:
(a) The number of slits (b) the slit width
(c) The slit separation (d) The order of the line
Hints:
122. Two point particles, one with charge $+8 \times 10^{-9}$ C and the other with charge -2×10^{-9} C, are separated by 4m. The electric field in N/C midway between them is:
(a) 9×10^4
(b) 13, 500 (c) 36×10^{-9}
(d) 22.5
Hints:
123. The time constant RC has units of:
(a) Second/farad (b) Second/ohm
(c) 1/second (d) None of the above
Hints: d)
124. If $g(x)$ and $f(x)$ are two functions, then $g(f(x))$ is:
(a) $f(g(x))$
(b) $f \circ g(x)$
(c) $g \circ f(x)$
(d) $f \circ g \circ x$
Hints:
125. $\log_a \log_b a$ is:
(a) $\log_a a$
(b) $\log_b c$
(c) $\log_c b$
(d) 1
Hints: d)
126. Domain of the function $f(x) = \sin^{-1}(x)$ is:
(a) Set of real numbers
(b) Set of non-zero real numbers
(c) Set of whole numbers (d) None of the above
Hints: d)
127. Which of the following species have the same number of neutron and electron as in C-14:
Hints:
128. For which of the following standard heat of formation is not zero:
(a) Cl_2
(b) Na
(c) Br_2
(d) $\text{Hg}(l)$
Hints:
129. Choose the correct order of decreasing basic strength
(a) $\text{MgO} < \text{Na}_2\text{O} > \text{P}_4\text{O}_{10} > \text{Al}_2\text{O}_3$
(b) $\text{Al}_2\text{O}_3 > \text{MgO} > \text{P}_4\text{O}_{10} > \text{Na}_2\text{O}$
(c) $\text{Na}_2\text{O} > \text{MgO} > \text{Al}_2\text{O}_3 > \text{P}_4\text{O}_{10}$
(d) $\text{P}_4\text{O}_{10} > \text{Na}_2\text{O} > \text{MgO} > \text{Al}_2\text{O}_3$
Hints: c)
130. The Govt. is making arrangements



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- to _____ the fugitive who is now being detained in a foreign country.
(a) Exile (b) Extradite (c) Exonerate (d) Expel
Hints: c)
-
129. The Govt. is making arrangements to _____ the fugitive who is now being detained in a foreign country.
(a) Exile (b) Extradite (c) Exonerate (d) Expel
-
130. A rectangular loop of wire has area A . It is placed perpendicular to a uniform magnetic field B and then spin around one of its sides at frequency f . the maximum induced emf is:
(a) BAf (b) $1BAf$ (c) $2BAf$ (d) $2 \square BAf$
-
131. A $35\text{-}\square\text{F}$ capacitor is connected to a source of sinusoidal emf with a frequency of 400 Hz and a maximum emf of 20 V. The maximum current is:
(a) 0 (b) 0.28 A (c) 1.8 A (d) 230 A
-
132. The probability of selecting a prime number from the set $\{1, 2, 3 \dots 20\}$ is:
(a) 920
(b) 12
(c) 25
(d) 720
Hints:
-
133. If $y = \cos 2x$, then $y^3 =$:
(a) $-4 \cos 2x$ (b) $-4 \sin 2x$
(c) $4 \cos 2x$ (d) $4 \sin$
Hints:
-
134. If $21f \times dx$, $6, 21g \times dx$, 9 , then $213f \times 4g \times dx$:
(a) 18 (b) 54 (c) 35 (d) 60
Hints:
-
135. Which of the following compounds has acidic hydrogen?
(a) Ethylene (b) 2-butyne
(c) Propyne (d) 3-butadiene
Hints:
-
136. Benzene molecule have six carbon atoms and six hydrogen atoms the NMR spectrum of benzene will show:
(a) 12-peaks (b) 6-peaks
(c) 3-peaks (d) Only a single peak
Hints:
-
137. Reaction of water with magnesium is:
(a) Slow (b) Fast
(c) It is slow in the start and become fast at the end
(d) It is slow in the start and become very slow at the end
Hints: c)
-
138. Choose the word most similar in meaning to the capitalized word —VESTIGEL:
(a) Servile (b) Embark (c) Hunch
(d) Indication
Hints:
-
139. The half-life of a radioactive isotope is 6.5 h. If there are



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direct violation of:

- (a) The zeroth law of thermodynamics
- (b) the first law of thermodynamics
- (c) The second law of thermodynamics
- (d) the third law of thermodynamics

Hints: c)

181. Polaroid glass is used in sun glasses because:

- (a) It is cheaper
- (b) It increases the light intensity to one and a half times on account of polarization
- (c) It reduces the light intensity to half its value on account of polarization
- (d) It produces irritation in the eye

Hints: c)

182. If $\theta = 0, \pm\pi, \pm2\pi, \dots, \pm n\pi, n \in \mathbb{Z}$, then

$R - \left\{ \frac{t}{t} = n\pi, n \in \mathbb{Z} \right\}$, is the domain of:

- (a) Sine (b) Cosine (c) Tangent
- (d) Cotangent

Hints: b)

183. If $f(x,y,z) = x^2ye^{2x} + (x+y-z)^2$ then

$\frac{\partial}{\partial x} f(x,x,x) = :$

- (a) $3x^3 e^{2x} + 2x^2 e^{2x} + 2x$
- (b) $2^3 e^{2x} + 2x$
- (c) $2x^3 e^{2x} + 2x^2 e^2 + 2x$
- (d) $3x^2 e^{2x} + 2x$

Hints: c)

184. The coefficient of x^5 in the expansion of $(2x^3 - \frac{3}{x})^{10}$, is:

- (a) $-\left(\frac{10}{5}\right) 2^5 \cdot 3^5$
- (b) $\left(\frac{10}{5}\right) 2^5 \cdot 3^5$
- (c) $-\left(\frac{10}{5}\right)$

(d) $\left(\frac{10}{5}\right)$

Hints:

185. If $2^2 2x^f x, y, z x y e x y z$, then f

- (a) $3^2 x^2 2x^3 x e^2 x e^2 x$
- (b) $3^2 x^2 e^2 x$
- (c) $3^2 x^2 2x^2 x e^2 x e^2 x$
- (d) $2^2 x^3 x e^2 x$ (a)

$3^2 x^2 2x$

$3x e^2 x e^2 x \square \square$

Hints:

186. The coefficient of $5x$ in the expansion of $10232xx$, is:

- (a) 55102 .35
- (b) 55102 .35
- (c) 105
- (d) 105

Hints:

187. A gas diffuses $\frac{1}{2}$ times as fast as hydrogen gas its molecular mass is:

- (a) 32 a.m.u (b) 25 a.m.u (c) 8 a.m.u
- (d) 16 a.m.u

Hints:

188. A solution has three components A, B and C. the mole fraction of A and C are 0.15, 0.45 respectively the mole fraction of is:

- (a) 0.25 (b) 0.005 (c) 0.40 (d) 0.60

Hints: c)

189. Balance the given equation by using the suitable

coefficients from the following sets:
 $\text{FeS}_2 + \text{O}_2 \square \text{Fe}_2\text{O}_3 + \text{SO}_2$

- (a) 4:11:2:8 (b) 1:10:2:8 (c) 6:5:3:7
- (d) 2:11:4:8

Hints: a)

190. Choose the word most similar in



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meaning to the capitalized word —REVILEI:

- (a) Perceive (b) Pawn (c) Abuse
(d) Prevent

Hints:

191. A certain wire has resistance R. Another wire, of the same material, has half the length and half the diameter of the first wire. The resistance of the second wire is:

- (a) R/4 (b) R/2 (c) R (d) 2R

Hints:

192. The uncertainty in position of an electron in a certain state is 5×10^{-10} m. The uncertainty in its momentum might be:

- (a) 5.0×10^{-24} kg .m/s
(b) 4.0×10^{-24} kg . m/s
(c) 3.0×10^{-24} kg .m/s
(d) All of the above

Hints:

193. A nucleus with mass number A and atomic number Z undergoes α decay. The mass number and atomic number, respectively, of the daughter nucleus are:

- (a) A, Z - 1 (b) A - 1, Z (c) A + 1, Z
(d) A, Z + 1

Hints: d)

194. Period of the function $y = 5 \sin 3x$, is:

- (a) 52
(b) 32
(c) 23

(d) 2

Hints:

195. 1151 Tan Tan

6 11?

- (a) 4
(b) 4
(c) 5
(d) 11

Hints:

196. Domain and range of the relation: $x^2 + y^2 = 9$, is:

- (a) R
(b) $a \in R, a \geq 0$
(c) 3, 3
(d) 3, 3

Hints:

197. Which one of the following is carbolic acid?

- (a) H_2CO_3
(b) 5% solution of benzoic
(c) 5% solution of phenol
(d) 5% solution lactic acid

Hints: c)

198. -----

Hints: a)

199. Methanol on treatment with Grignard's reagent

CH_3

Mgrs. the product formed is:

Methanol on treatment with Grignard's reagent

CH_3

Mgrs. the product formed is:

Hints: a)

200. The foreign ministers would not

_____ on the talks

ended in a dead lock.

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- (a) Consult (b) Negotiate
(c) concede (d) Compromise
Hints: d)





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- (b) Each contained a different species of insect.
(c) Each contained a different species of insects.
(d) Each contained a different species of insect.

Hints: b)

8. The hydrated captions of first transition series that imparts a blue color:

- (a) Cr^{+3} , CO^{+2} , Cu^{+3}
(b) Cu^{+2} , Zn^{+2} , Ti^{+4}
(c) Ti^{+3} , Zn^{+2} , Cu^{+2}
(d) Cr^{+3} , Ti^{+4} , Cu^{+2}

Hints: a)

9. Select the correct order of the acids strength?

- (a) $\text{CH}_3\text{COOH} >> \text{CHCl}_2\text{COOH} > \text{CH}_2\text{ClCOOH}$
(b) $\text{CHCl}_2\text{COOH} > \text{CH}_2\text{ClCOOH} > \text{CH}_3\text{COOH}$
(c) $\text{CH}_2\text{COOH} > \text{CHCl}_2\text{COOH} > \text{CH}_2\text{ClCOOH}$
(d) $\text{CHCl}_2\text{COOH} >> \text{CH}_2\text{COOH} > \text{CH}_2\text{ClCOOH}$

Hints: d)

Because when electron withdraw group attached to carboxylic acid increases its acidity.

10. If 50 KV is the applied potential in an X-ray tube then the minimum wavelength of X-rays produced is:

- (a) 0.2 nm (b) 2 nm (c) 0.02 nm (d) 2A

Hints: c) $\lambda = \frac{h}{E}$,

11. Two projectiles are in flight at the same time. The

acceleration of one relative to the other:

- (a) Is always 9.8 m/s²
(b) Can be as large as 19.8 m/s²
(c) Can be horizontal (d) Is zero

Hints: d)

12. Choose the correct sentence.

- (a) He can speak Japanese because he was born in Canada.
(b) He can speak Japanese until he was born in Canada.
(c) He can speak Japanese even though he was born in Canada
(d) He can speak Japanese so he was born in Canada.

Hints: c)

13. Which is not correct about the manufacture of ammonia by Haber – Process? The break opening of the nitrogen triple bond (N \equiv N) to form N₂H₂ in first step of the reaction is taken as:

- (a) Very difficult step (b) Highly unstable
(b) product
(c) Highly endothermic (d) None of the

Above

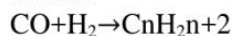
Hints: c)

14. hydrogenolysis Carbon monoxide can be converted by to alkanes by the process known as:

- (a) Contact process
(b) Fischer-tropic (FT) process
(c) Fermentation process
(d) Haber-Bosch process

Hints: d)

Fischer tropic is the process by which CO and H₂ converted into alkanes'





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15. How much phosphorus is required by an adult man per day?
(a) 500 mg (b) 400 mg (c) 800 mg (d) 1800 mg
Hints: c) Phosphorus is an essential macromineral, meaning to be healthy you must include this nutrient in your diet. Dietary sources include almost all foods. Phosphorus is the second most abundant mineral nutrient in the body, after calcium. Adults need about 800 mg daily.
16. Of the following the dioeciously plant be
(a) sun-flower (b) Wheat (c) Mulberry (d) Maize
Hints: A dioeciously plant is a plant with male and female reproductive parts on separate plants. The male and female parts are known as the staminate and the pistil late, respectively. Some well-known Dioeciously plants include holly, asparagus, dates, mulberry, ginkgo, persimmons, currant bushes, juniper bushes, sago, and spinach.
17. Each kidney of human being is weighing about:
(a) 140 grams (b) 160 grams (c) 130 grams (d) 150 grams
Hints: The kidneys are dark red, slightly flattened, bean shaped organs about 12cm long, 6cm wide and 4cm thick each weighing about 150 grams.
18. How many sodium ions (Na^+) will be pumped out, when IO-potassium ions (K^+) are transported inward of resting member potential.
(a) 5 (b) 10 (c) 15 (d) 20
Hints: c) For every two K^+ ions that are actively transported inward, three Na^+ are pumped out
19. At absolute zero the molecules of hydrogen gas will have:
(a) Only translational motion (b) Only vibrational motion (c) Only rotational motion (d) All the motion are ceased
Hints: b)
Because at absolute temperature all the hydrogen gas changes to solid and in solids vibration motion occurs.
20. Which one of the following discovered the vaccine for first time against the small pox in 1796.
(a) Edward Jenner (b) Hoi stem wings (c) F. H Harbor (d) JammesShwang
Hints: a) Smallpox vaccine, the first successful vaccine to be developed, was introduced by Edward Jenner in 1796. He followed up his observation that milkmaids who had previously caught cowpox did not later catch smallpox by showing that inoculated cowpox protected against inoculated smallpox.
21. The main axis culminates in a flower and produces three or more daughter axis each of which continues the branching in similar manner is know as:
(a) Uniparous cyme (b) bigamous cyme



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- Hints: c)
30. The functional group region in infra-red spectrum lies between:
(a) 500 – 1300cm⁻¹
(b) 600 – 1500cm⁻¹
(c) 1500 – 4000cm⁻¹
(d) 2500 – 3500cm⁻¹
Hints: c)
31. Which one of the following comes into existence when bacterial plasmid naturally modified to produce it?
(a) pBR 322 (b) Npq 303
(c) oSR 210 (d) kMG 319
Hints: a)
32. Exophthalmia is a classic symptom of:
(a) Hyperthyroidism (b) Hypocalcaemia
(c) Hypochondria (d) Hyperglycemia
Hints: a) exophthalmia refers to abnormal protrusion of the eyeball or eye balls. This is an autoimmune condition that affects around one in every three people with an overactive thyroid gland (hyperthyroidism) caused by Graves` disease.
33. Percentage of CO carried by plasma is:
(a) 5% (b) 6% (c) 7% (d) 8%
Hints: c) carbon dioxide is more soluble in blood than is oxygen. About 5 to 7 percent of all carbon dioxide is dissolved in the plasma. Second, carbon dioxide can bind to plasma proteins or can enter red blood cells and bind to hemoglobin forming carboxy Hemoglobin
- (10%). Binding of carbon dioxide to hemoglobin is reversible. The majority of carbon dioxide molecules (85 percent) are carried as part of the bicarbonate buffer system.
34. In stationary waves:
(a) There is not transfer of energy
(b) Energy is constant at all points
(c) Phase is the same for all points
(d) both (a) & (b)
Hints: a)
35. If each vector have unit magnitude than $\vec{A} \cdot \vec{A}$ is:
(a) South (b) One (c) North (d) West
Hints: b)
36. Which is not true about Grignard reagent?
(a) They are highly reactive compounds
(b) They are very stable compounds and can be isolated easily
(c) They have synthetic importance
(d) They are represented by general formula RMgX.
Hints: b)
37. Choose reaction that is not correct?
(a) $2\text{H}_2\text{O} + \text{SO}_2 \rightarrow \text{H}_2\text{SO}_4$
(b) $3\text{H}_2 + \text{PCl}_5 \rightarrow \text{HCl} + \text{POCl}_3$
(c) $3\text{C}_2\text{H}_5\text{COOH} + \text{P}_2\text{O}_5 \rightarrow \text{C}_6\text{H}_5\text{COOH} + \text{C}_6\text{H}_5\text{C}_2\text{H}_5$
(d) $3\text{C}_2\text{H}_5\text{COOH} + \text{P}_2\text{O}_5 \rightarrow \text{C}_6\text{H}_5\text{COOH} + \text{C}_6\text{H}_5\text{C}_2\text{H}_5$
Hints: b)
38. —C.S.FI is found in between.
(a) Pia matter and Dura mater
(b) Pia mater and arachnoid mater



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- (c) Pia mater and neural canal
(d) Dura mater and arachnoid mater
Hints: b) The cerebrospinal fluid (CSF) is produced from arterial blood by the choroid plexuses of the lateral and fourth ventricles by a combined process of diffusion, pinocytosis and active transfer. It is present between Arachnoid mater and pia mater (meninges layer consists of pia mater, Arachnoid Mater and Dura mater)
39. Kelps are:
(a) Diatoms (b) Red-algae
(c) Green-algae (d) Brown-algae
Hints: d) kelps are large seaweeds (algae) belonging to the brown algae (phaeophyceae) having approximate length of 100m,
40. Independent gametophyte and sporophyte are found in:
(a) Liverworts (b) Tracheophytes
(c) Ectocarpus (d) Mosses
Hints: c) Alternation of Generations. ...In bryophytes (mosses and liverworts), the dominant generation is haploid, so that the gametophyte comprises what we think of as the main plant. The opposite is true for tracheophytes (vascular plants), in which the diploid generation is dominant and the sporophyte comprises the main plant .
41. In a purely resistive circuit the current:
(a) Leads the voltage by one-half of a cycle
(b) Leads the voltage by one-fourth of a cycle
(c) Leads the voltage by one-half of a cycle
(d) Is in phase with the voltage
Hints: d)
42. -----

43. -----

44. Your friend proved more sympathetic than I, expected he _____ do.
(a) will (b) shall (c) would (d) should
Hints: c)
45. XYZ are the elements in the same short period of the periodic table the oxide of X is amphoteric the Exide of Y is basic and the Exide of Z is acidic what is the order of increasing atomic number for these elements?
(a) XYZ (b) XZY (c) YXZ (d) ZXY
Hints: c) X=amphetric, Y=Basic, Z=acidic order of increasing atomic number for these elements.
Basic → amphoteric, → acidic
Y → X → Z = YXZ
46. In which of the following reaction hydrogen acts as oxidizing agent.
(a) $H_2 + Cl_2 \rightarrow 2HCl$
(b) $C_2H_4 + H_2 \rightarrow C_2H_6$
(c) $2Na + H_2 \rightarrow 2NaH$
(d) $N_2 + 3H_2 \rightarrow 2NH_3$
Hints: c)
 $NaO + H_2O \rightarrow 2Na^{+1}H^{-1}$
47. The correct order of the reactivity of hydrocarbon given below is:
(a) $C_2H_4 > C_2H_2 > C_6H_6$
(b) $C_6H_6 > C_2H_4 > C_2H_2$
(c) $C_2H_2 > C_2H_4 > C_6H_6$



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symmetry. There are currently 5000 species, 150 of which are freshwater. Larvae are planktonic and adults are sessile. Metazoa are multicellular organisms.

54. The females of one of the following classes possess a single ovary, that is:
(a) Pisces (b) Amphibia (c) Reptilia
(d) Aves

Hints: d) In the primitive jawless fish, and some teleosts, there is only one ovary, formed by the fusion of the paired organs in the embryo.

55. The fluorescent pigments in the eyes of fruit fly is an example of:
(a) Over dominance (b) Complete dominance
(c) Incomplete (d) Co-dominance

Hints: a) overdominance : the condition wherein a heterozygote produces a phenotype more extreme or better adapted than that of the homozygote.

56. The number of loops in the standing waves is directly dependent on:
(a) Wavelength (b) Frequency
(c) Velocity (d) Speed
Hints: d) $f_n = n f_1$

57. In Einstein's universe what is the fourth dimension:
(a) Distance (b) Speed (c) Time
(d) Energy
Hints: c)

58. A.C and D.C have the same:
(a) Affect in charging battery
(b) Affect in charging capacitor
(c) Heating effect through a resistance

(d) Affect passing through an inductance

Hints: c) RMS values

59. —I am disappointed that you feel you have to lie to me, Jason, I said his father.

Select the correct indirect speech:

- (a) His father said to Jason that he is sorry to feel disappointed that he has to lie to me.
(b) Jason's father said to him that he was sorry that he felt he had to lie to me.
(c) Jason's father said that he was disappointed to know that he felt he had to lie to him.
(d) Jason's father was disappointed and sorry that he had to lie to him and that he felt it.

Hints: c)

60. Which is strong electrolyte?

- (a) $\text{Ca}(\text{OH})_2$
(b) SiCl_4
(c) KCl
(d) SrCl_2

Hints: c)

$\text{KCl} \rightarrow$ it is a strong electrolyte and dissociates completely. It is more ionic compound than others and good at solvating ions.

61. The roots given out from rhizome of fern are called:

- (a) Pneumatophore (b) Phizophores
(c) Rhizoids (d) Adventitious roots

Hints: d) pneumatophore: an aerial root specialized for gaseous exchange. Rhizophore: A downward-growing stem in moss that forms roots. Rhizoid: a filamentous outgrowth or root hair on the underside of the thallus in



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<p>some lower plants, especially mosses and liverworts, serving both to anchor the plant and (in terrestrial forms) to conduct water. Adventitious roots: some roots, called adventitious roots, arise from an organ other than the root usually a stem, sometimes a leaf. They are especially numerous on underground stems. The formation of adventitious roots makes it possible to vegetatively propagate many plants form stem or leaf cuttings.</p>	<p>(d) It is not electromagnetic waves Hints: c)</p>
<p>62 Pigment combination of a carotenoid is: (a) Blue, green, brown, or red (b) Orange, yellow, blue, or brown (c) Yellow, orange, red, or brown (d) Blue, red, orange, or brown Hints: c) carotenoids are land pigments responsible for right red, yellow and orange hues in many fruits and vegetables</p>	<p>65 To obtain greater dispersion by a diffraction grating: (a) The slit width should be increased (b) The slit width should be decreased (c) The slit separation should be increased (d) The slit separation should be decreased Hints: a)</p>
<p>63 The study of fishes is called: (a) Ornithology (b) Ichthyology (c) Herpetology (d) Ethoogy Hints: b) ornithology is a branch of zoology that concerns the study of birds. Ichthyology is the branch of zoology that deals with fishes. Herpetology is the branch of zoology concerned with reptiles and amphibians. Ethology is the science of animal behavior.</p>	<p>66 The unit —henryl is equivalent to: (a) Volt-second/ampere(b) Volt/second (c) Ohm (d) Ampere volt/ second Hints: a)</p>
<p>64 X-rays are widely used as a diagnostic tool in medicine because of its: (a) Particle property (b) Cost of X-ray unit is low (c) High penetrating power</p>	<p>67 Choose the word most similar in meaning to the capitalized word —OBLITERATEl: (a)Offend (b) Haul (c) Rent(d) Destroy Hints: d)</p> <p>68 The compound Aldehyde hydrazone is: (a) $\frac{R}{H} > C = N - NH_2$ (b) $\frac{R}{H} > CH - NH - O - NH_2$ (c) $\frac{R}{H} > CH - NH - NH_2$ (d) $\frac{R}{H} > CH - O - N = NH$ Hints: a)</p>
<p>64 X-rays are widely used as a diagnostic tool in medicine because of its: (a) Particle property (b) Cost of X-ray unit is low (c) High penetrating power</p>	<p>69. Which is the correct IUPAC name of the compound given below? $O = C - CH_3$ (a) Acetophenon (b) Phenylethanone (c) Phenyl ethanol (d) Phenylacetate</p>



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Hints: b)

70. Chromium compounds in which oxidation state of chromium is 2 + behaves as a:

- (a) Strong oxidizing agent
- (b) Strong reducing agent
- (c) Very weak oxidizing agent
- (d) Very weak reducing agent

Hints: b) Transition metals with small oxidation number are good reducing agents. $\text{Cr}^{+3}\text{Cl}_3^{-3}$ are good reducing agents, $\text{K}^{+2}_2\text{Cr}^{+6}\text{O}^{-8}_4$ are good oxidizing agents.

71. Primary amines on treatment with alkyl halide yield:

- (a) Secondary amine (b) Tertiary amine
- (c) Quaternary ammonium salt
- (d) Mixture of (a), (b) & (c)

Hints: a)

72. D.N.A of bacterium is:

- (a) Haploid, single stranded, coiled
- (b) Diploid, double stranded, coiled
- (c) Haploid, double stranded, coiled
- (d) Diploid, single stranded, coiled

Hints: c) DNA is double stranded and since bacteria are generally considered genetically haploid, have a rapid generation time and can be easily grown to large population densities, traditional genetic analysis is that much more straight forward than for diploid eukaryotes.

73. Chiroptera are:

- (a) Flying mammals (b) Flesh eating mammals
- (c) Hoofed mammals (d) Aquatic mammals

Hints: c) chiropteran, hand wing, alludes to the great elongation of the fingers that support the flying

membrane. Bats are mammals of the order chiropteran whose forelimbs form webbed wings, making them the only mammals naturally capable of true and sustained flight.

74. The swallowing process is regulated by:

- (a) Throat (b) Pharynx
- (c) Medulla oblongata (d) Stomach

Hints: c) Swallowing is a complex mechanism using both skeletal muscle (tongue) and smooth muscles of the pharynx and esophagus. The reflex is initiated by touch receptors in the pharynx as a bolus of food is pushed to the back of the mouth by the tongue, or by stimulation of the palate (palatal reflex).

75. A total charge of 100C flows through a 12W bulb in a time of 50 second. What is the potential difference across the bulb during this time?

- (a) 0.12V (b) 2.0V (c) 6.0V (d) 24V

Hints: c) $P = V \frac{Q}{T}$
 $\frac{pt}{Q} = V$

76. The total energy of a hydrogen atom in its ground state is:

- (a) Zero (b) Negative
- (c) Positive (d) None of the above

Hints: b) this function is known as la atomic orbital. H atom in ground state has energy = -13.6V.

77. Becquerel is the unit of:

- (a) Decay constant (b) Half life
- (c) Mean life (d) Activity

Hints: d)

78. The revolution in art has not lost



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- Hints: b)
87. What are the values of principal quantum number and azimuthal quantum number for the last electron in Chlorine atom?
(a) 1.6 (b) 1.3 (c) 3.1 (d) 6.1
Hints: c)
88. $K_p = K_c(RT)^{-2m}$ in the equation if $\Delta n < 0$ then:
(a) $K_p = K_c$
(b) $K_p < K_c$
(c) $K_p > K_c$
(d) $K_p < 0$
Hints: b)
89. Amphibians generally have three chambers in their hearts. What type of chambers they are?
(a) One ventricle, one atrium, one outflow tract
(b) Two ventricles, one atrium
(c) One ventricle, one atrium
(d) One ventricle, one atrium, one sinus venous
Hints: c) The frog heart has 3 chambers: two atria and a single ventricle. The atrium receives deoxygenated blood from the blood vessels (veins) that drain the various organs of the body. The left atrium receives oxygenated blood from the lungs and skin (which also serves as a gas exchange organ in most amphibians).
90. Release of calcium from bone in to blood is controlled by
(a) Parathormone (b) Calcitonin
(c) Thyroxine (d) Both (a) & (b)
Hints: d) The parathyroid hormone (PTH), secreted by the parathyroid glands, is responsible for regulating blood calcium levels; it is released whenever blood calcium levels are low. PTH increases blood calcium levels by stimulating osteoclasts, which break down bone to release calcium into the blood stream.
91. That 1st field trial of genetically engineered plant occurred in France and USA in:
(a) 1980 (b) 1982 (c) 1984 (d) 1986
Hints: d)
92. A laser beam can be sharply focused because it is:
(a) Highly coherent (b) Plane polarized
(c) Intense (d) Highly directional
Hints: d)
93. A charged capacitor stores 10 C at 40 V. Its stored energy is:
(a) 400 J (b) 4 J (c) 0.2 J (d) 200 J
Hints: d) $U = \frac{1}{2} QV$
94. A hydrogen atom that has lost its electron is moving east in a region where the magnetic field is directed from south to north. It will be deflected:
(a) Up (b) Down (c) North (d) South
Hints: a)
95. Choose the word opposite in meaning to the capitalized word —TANGIBLE!:
(a) Embodied (b) Conceptual
(c) Phenomenal (d) Verifiable
Hints: b)
96. The colour of thin films is a result



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of:
(a) Dispersion (b) Absorption of light
(c) Scattering of light (d) None of the above
Hints: d)

97. Together the old man and the young boy washed the dishes. Select the correct passive voice:
(a) The old man and the young boy were washing the dishes together.
(b) The old man and the young boy together washed the dishes.
(c) The dishes were washed by the old man and the young boy together.
(d) Together, the old man and the young boy wash the dishes.
Hints: b)

98. Shown below are portion of orbital diagrams representing the ground state electronic configuration of certain elements. Which of them obeys the Pauli's exclusion principle?
Hund's rules?
 $\uparrow \uparrow \uparrow \uparrow$
 $\uparrow \uparrow \uparrow$
 $\uparrow \uparrow \uparrow$
Hints: c)

Hund's rule states when degenerate orbital you have first filled electron with same spin then with opposite spin.

99. Chemical shift in NMR spectroscopy is expressed as delta (δ) or tau (τ) scale. Choose the correct relationship between δ and τ :
(a) $\delta = 10 - \tau$
(b) $\delta = 10 + \tau$
(c) $\tau = \delta - 10$
(d) $\tau = 10 - \delta$

Hints: d)

100. Choose the correct statement:
DDT an insecticide is considered as:
(a) Very unstable molecule having half-life $\frac{1}{2}$ to 1 year.
(b) Unstable molecule having half-life 2 to 5 years.
(c) Stable molecule having half-life 5 to 8 years.
(d) Very stable molecule having half-life 10 to 15 years.

Hints: d) DDT is very stable compound

101. Sense of taste is called:
(a) Gustation (b) Tactition
(c) Nociception (d) Olfaction
Hints: a) Gustation: the action or faculty of tasting.
Tactition: Sense of touch and pressure.
Nociception: Sense of pain.
Olfaction: Sense of smell

102. Select meta directing group of the following?
(a) $-\text{OH}$ (b) $-\text{NR}_2$
(c) $-\text{CN}$ (d) $-\text{OR}$
Hints: c) CN is meta directing group because multiple bond attached to benzene are meta directing

103. The osmotic pressure of dilute solution is given below by relationship:

a) $\pi = \frac{MRT}{C}$
b) $\pi = \frac{RCT}{M}$
c) $\pi = \frac{MR}{TC}$
d) $\pi = \frac{RC}{TM}$
Hints: b)

104. Choose the one which is not the



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revolution brought in modern societies

Hints: a)

112 Pka values of some acids are given below:

Choose the weaker acid?

(a) HClO_4 (-10)

(b) HBr (-9)

(c) H_2SO_4

(d) HCl (-7)

Hints: c)

The larger K_a , is the more negative the $\text{p}K_a$ so the lower the PK_a , the stronger the acid

H_2SO_4 (-3) Greater $\text{PK}_a \rightarrow$ weak acid

113 The water formed in the combustion analysis is usually absorbed by:

(a) $\text{Mg}(\text{NO}_3)_2$

(b) $\text{Mg}(\text{ClO}_4)_2$

(c) $\text{Mg}(\text{OH})_2$

(d) $\text{Mg}(\text{ClO}_2)_2$

Hints: b)

Water in combustion analysis is absorbed by $\text{Mg}(\text{ClO}_4)_2$ which is deliquescent (white powder)

114 When small amount of ammonia is added to CuSO_4 solution in water, blue ppt of

$[\text{Cu}(\text{H}_2\text{O})_4(\text{OH})_2]$ is formed. The blue ppt dissolves on addition of excess of ammonia.

The product formed is:

(a) $[\text{Cu}(\text{H}_2\text{O})_2(\text{NH}_3)_2(\text{OH})_2]$

(b) $[\text{Cu}(\text{NH}_3)_4(\text{OH})_2]$

(c) $[\text{Cu}(\text{NH}_3)_4(\text{H}_2\text{O})_2]^{2+}$

(d) $[\text{Cu}(\text{NH}_3)_3(\text{H}_2\text{O}_3)]^{2+}$

Hints: a)

$[\text{Cu}(\text{H}_2\text{O})_4(\text{OH})] + \text{NH}_3 \rightarrow$

115 In case of immunity, the first line of body defense is:

(a) Macrophages (b) Lymphocytes

(c) Blood cells (d) Skin

Hints: d) skin - 1st line of defense

Cellular counterattack - 2nd line of defense

Lymphocyte mediated immunity:

Third line of defense.

116 Transport of organic solutes from the source of assimilation to the source of sink is:

(a) Transportation (b)

Transduction

(c) Translocation (d)

Transformation

Hints: c) Translocation moves photosynthates via the phloem from sources to sinks. Transduction is the process by which foreign DNA is introduced into a cell by a virus or viral vector.

Transformation is one of three processes for horizontal gene transfer, in which exogenous genetic material passes from bacterium to another, the other two being conjugation (transfer of genetic material between two bacterial cells in direct contact and transduction (injection of foreign DNA by a bacteriophage).

117 The percentage of symbiotic association by

Ascomycota is more than:

(a) 50% (b) 40% (c) 20% (d) 30%

Hints: b) more than 40% of

Ascomycetes live with green algae and cyanobacteria in beneficial symbiotic association forming lichens.

118 A vector of magnitude 20 is added to a vector of magnitude



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25. The magnitude of this sum might be:
a) Zero (b) 3 (c) 12 (d) 47
Hints: c) $\vec{R} < \vec{A} + \vec{B}$
-
- 119** Graphite is one of the allotropic form of Carbon it is:
(a) Isotropic (b) Anisotropic
(c) Bond conductor of electricity
(d) Both (b) & (c)
Hints: b)
Graphite is anisotropic property of being directionally dependent which implies different properties in different directions.
-
- 120** Delayed wound healing is caused by deficiency of:
(a) Zn (b) Fe (c) Co (d) Mn
Hints: b)
-
- 121** If one Faraday was to be 30,230 coulombs instead of 96,500 coulombs then charge on an electron is:
(a) $1.5 \times 10^{-19}C$
(b) $1 \times 10^{-19}C$
(c) $0.5 \times 10^{-19}C$
(d) $6.02 \times 10^{-19}C$
Hints: c) $Q=ne$
-
- 12 Which of the following statements is correct?
2. (a) Antipyretic drugs lower the temperature set point
(b) Antipyretic drugs rise the temperature set point
(c) Antipyretic drugs do not effect on temperature set point
(d) Antipyretic drugs first lower the temperature set point and then rise
Hints: a) Antipyretic is medication used to lower body temperature when a fever is present. Examples: Aspirin, acetaminophen (Tylenol),
-
- ibuprofen, and others.
-
- 12 Which of the following is correct about speed of nerve impulse:
3. (a) Thicker the nerve fiber-less resistance to flow of current-faster the nerve impulse.
(b) Thicker the nerve fiber-more resistance to flow of current-slower the nerve impulse
(c) Thinner the nerve fiber-less resistance to flow of current-slower the nerve impulse
(d) None of the above
Hints: a) The speed at which nerve impulses travel depends on the diameter of the axon and the presence of the myelin sheath
-
- 124** Archaea live in both extreme and moderate environments those living in extreme condition are called:
(a) Extremophil (b) Methanogeous
(c) Extremophyte (d) Extremogeous
Hints: a) An extremophile is an organism that thrives in physically or geochemically extreme conditions that are detrimental to most life on Earth.
-
- 125** In a cricket match 500 spectators are counted one by one. How many significant figures will be there in the final result?
(a) 0 (b) 1 (c) 2 (d) 3
Hints: d)
-
- 126** The time period of a simple pendulum is 2 seconds. If its length is increased by 4 times, then its period becomes:
(a) 16 s (b) 12 s (c) 8 s (d) 4 s
Hints: d) $\tau = 2\pi \sqrt{\frac{L}{g}}$



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<p>the ovarian follicles in the ovaries. In turn, inhibin suppresses FSH.</p>	<p>time Hints: d)</p>
<p>136 A particle, held by a string whose other end is attached to a fixed point C, moves in a circle on a horizontal frictionless surface. If the string is cut, the angular momentum of the particle about the point: C. (a) Increases (b) Decreases (c) Does not change (d) Changes direction but not magnitude Hints: c)</p>	<p>140 Which of the following is closest to a yard: (a) 0.01 m (b) 0.1 m (c) 1 m (d) 100 m Hints: c)</p>
<p>137 An electron has charge $-e$ and mass m. A proton has charge e and mass $1840m$. A —Proton volt is equal to: (a) 1 eV (b) 1840 eV (c) $(1/1840)$ eV (d) $\sqrt{\quad}$ Hints: a)</p>	<p>141 You stand on a spring scale on the floor of an elevator. Of the following, the scale shows the highest reading when the elevator: (a) Moves upward with increasing speed (b) Moves upward with decreasing speed (c) Remains stationary (d) Moves downward with increasing speed Hints: a) $F = T - W \Rightarrow T = F + W$</p>
<p>138 The rotational inertia of a disk about its axis is 0.70 Kg. m². When a 2.0-kg weight is added to its rim, 0.40m from the axis, the rotational inertia becomes: (a) 0.38 Kg – m² (b) 0.54 kg – m² (c) 0.86 kg – m² (d) 1.0 kg – m² Hints: c) $I = \frac{1}{2} mr^2$</p>	<p>142 A wheel starts from rest and has an angular acceleration of 4.0 rad/s². When it has made 10 rev its angular velocity is: (a) 16 rad/s (b) 22 rad/s (c) 32 rad/s (d) 250 rad/s Hints: b)</p>
<p>139 As you have not prepared your work, (a) You may not fail in the examination (b) You could prepare harder next time (c) You would do better in the examination (d) You are not likely to do well this</p>	<p>143 Choose the word opposite in meaning to the capitalized word —ANARCHIC: (a) Riotous (b) Turbulent (c) Disordered (d) Organized Hints: d)</p>
	<p>144 The electronic transition that is involved in the visible region is: (a) $\sigma - \sigma$ (b) $d - d$ (c) $\pi - \pi$ (d) $\pi - \sigma$ Hints: b) $d-d$ occurs only in transition element.</p>



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arteries, occurring typically in old age.	Hints: d)
163 The path traced by μ particles in air is: (a) Straight (b) Erratic (c) Circular (d) Elliptical	169 If p is a pressure and δ is a density then p/δ has units of: (a) m^2/s^2 (b) N/m^2 (c) Kg/m^2 (d) m^3/Kg Hints: a)
164 Angle that a body traverses at the centre of a circle in two turns is: (a) 4π Rads (b) 720 (c) 12.6 Rads (d) All of the above Hints: d)	170 Intrinsic semi-conductor can be converted into extrinsic semi-conductor by adding: (a) Trivalent impurity (b) Pentavalent impurity (c) Pentavalent or trivalent impurities (d) None of the above Hints: c)
165 Two tuning forks of frequencies 256 Hz and 260 Hz are sounded together the time interval between two consecutive maximum sound heard by a listener is: (a) 0.5 Sec (b) 2 Sec (c) 1 Sec (d) 0.25 Sec Hints: d) $T = \frac{1}{f}$	171 A 30-cm long string, with one end clamped and the other free to move transversely, is vibrating in its second harmonic. The wavelength of the constituent traveling waves is: (a) 10 cm (b) 30 cm (c) 40 cm (d) 120 cm Hints: b) $l = n \lambda$
166 Choose the word most similar in meaning to the capitalized word —PRODIGIOUS!: (a) Enormous (b) Sacred (c) Seismic (d) Tiny Hints: a)	172 If you like sport, this is a great place. There's a lot to choose _____. (a) Among (b) From (c) At (d) For Hints: b)
167 Oligosaccharides are involved in the formation of: (a) Secreted proteins (b) Blood clotting factors (c) Anti-bodies (d) All of the above Hints: d)	173 What is the concentration of nitric acid solution having PH of 4? (a) 4 (b) -4 (c) 10^{-4} (d) 10^{-10} Hints: b)
168 Select the correct product: $R - C \equiv N + N_2O$ The hydrolysis of Alkyl nitriles in the presence of acid form: (a) $R - CO - NH_2$ (b) $R - CH_2 - NH_2$ (c) $R - C - NH_2$ (d) $R - C - OH \quad OH \mid O \parallel b$	174 What is the concentration of nitric acid solution having PH of 4? (a) 4 (b) -4 (c) 10^{-4} (d) 10^{-10}



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- (a) Carbocation (b) Oxonium ion
(c) Carbanion (d) Oxalate ion

Hints: a)

- 175 A cell is constructed of the following two half cells. What is Eof the cell?
 $\text{Ag}^{++} + e - \text{Ag} + 0.80 \text{ V}$ $\text{Al}^{3++} + 3e - \text{Al} - 1.67 \text{ V}$
(a) 2.47 V (b) 0.087 V (c) - 0.87 V
(d) 5.81V
Hints: a)

- 176 A slowly progressive disease of the brain that is characterized by the impairment of memory and eventually by disturbance in reasoning, planning, language and perception is one of the following?
(a) Alzheimer's disease (b) Meningitis
(c) Cerebrovascular accident (d) Malignant
Hints: a) the progressive mental deterioration that can occur in middle or old age, due to generalized degeneration of the brain is called as Alzheimer's disease, It is the commonest cause of premature senility.

- 177 If $\vec{A} \cdot \vec{B} = 1$, $A = 2$, $B = 1$ then the angle between them is:
(a) 30°
(b) 60°
(c) 90°
(d) 45°
Hints: b) $A \cdot B = AB \cos \theta$ $\theta = \cos^{-1} \left[\frac{A \cdot B}{AB} \right]$

- 178 An object of mass 1 g is whirled in a horizontal circle of radius 0.5m at a constant speed of 2m/s. The

work done on the object during one revolution is:

- (a) 0 (b) 1 J (c) 2 J (d) 4 J

Hints: b) No work is done

- 179 The candidate _____ when asked why he had left his last job; he did not want to admit that he had been dismissed.
(a) Demurred (b) Confided
(c) Dissembled (d) Rejoiced
Hints: c)

- 180 What is the formula of Dichloro-Bis-Ethylenediamine cobalt (II)?
(a) $[\text{Co}(\text{en})_2\text{Cl}_2]$
(b) $[\text{Co}(\text{en})_2\text{Cl}_2]^{2-}$
(c) $[\text{Co}(\text{en})_2\text{Cl}_2]^{1-}$
(d) $[\text{Co}(\text{en})_2\text{Cl}_2]^{1+}$
Hints: a)

- 181 Lithium reacts with air to form:
(a) Li_2O
(b) Li_2N
(c) $\text{Li}_2\text{O}_2 + \text{Li}_2\text{CO}_3$
(d) Both (a) & (b)
Hints: d)

- 182 What will be the shape of a molecule which contains two sigma bond pairs and one lone pair?
(a) Linear (b) V shape (c) Tetragonal
(d) Triangular
Hints: b)

- 183 The most abundant lymphocytes are:
(a) C-cells (b) A & B cells
(c) B & C cells (d) B & T cells
Hints: d) B lymphocytes, also known as B cells, are one of the five types of white blood cells, or leukocytes, that circulate throughout the blood. They and T-lymphocytes are the most abundant types of white blood cells. B lymphocytes are a vital part



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- of the body's immune system.
- 184** The number of cortical nephrons are:
(a) 70–80% (b) 80–90% (c) 60–70%
(d) 60–80%
Hints: a) Cortical nephrons comprise 70 – 80% of nephrons and Juxtamedullary nephrons comprise 20 – 30%
- 185** The outer tissue of cambium develops in to:
(a) Xylem (b) Phloem (c) Cortex
(d) Epidermis
Hints: b)
- 186** A mass accelerates uniformly when the resultant force acting on it is:
(a) Zero (b) Constant but not zero
(c) Increases uniformly with respect to time
(d) Both (a) & (c)
Hints: b)
- 187** The 1st symptom of Leaf curl disease of cotton infection appear within:
(a) 1 – 2 weeks (b) 2 – 3 weeks
(c) 3 – 4 weeks (d) 4 – 5 weeks
Hints: b) the first symptoms of infection in cotton appear within 2-3 weeks of inoculation and are initially characterized by deep downward cupping of youngest leaves caused by complex of Begomovirus species transmitted by white fly Bemisia Tabaci.
- 188** The mutation that occurs in an egg or sperm cell, or those that occur just after fertilization, are called _____ mutation.
(a) New (b) De novo (c) Drift (d) Both(a)&(b)
Hints: d)
- 189** In Young's double slit experiment both the separation between the slits and the distance between the slits and the screen are halved; then the fringe width is:
(a) Halved (b) Unchanged (c) Doubled
(d) Zeros
Hints: b) $y = \frac{\lambda L}{d}$
- 190** In pure inductance, the average power dissipated is:
(a) 1 (b) Greater than 1
(c) Less than 1 (d) Zero
Hints: d)
- 191** As a loop of wire with a resistance of $10\ \Omega$ moves in a constant non-uniform magnetic field, it loses kinetic energy at a uniform rate of 4.0 ms/s. The induced current in the loop is:
(a) 0 (b) 2 mA (c) 2.8 mA (d) 20 mA
Hints: d)
- 192** Choose the correct sentence
(a) Turn left by the crossroads when you reach it
(b) Turn left by the crossroads until you reach it.
(c) Turn left with the crossroads when you reach it.
(d) Turn left at the crossroads when you reach it.
Hints: d)
- 193** Which of the following electronic configuration is / are correct?
(i) $23\text{Na } 1\text{S}22\text{S}22\text{P}63\text{S}1$
(ii) $29\text{Cu } [\text{Ar}] 4\text{S}13\text{d}10$
(iii) $24\text{Cr } [\text{Ar}] 4\text{S}23\text{d}4$
(a) I only (b) I and III only
(c) I and II only (d) II and III only
Hints: c)

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1. The domain of principal sine function is:

(A) $0, \frac{\pi}{2}$
(B) $-\frac{\pi}{2}, \frac{\pi}{2}$
(C) $0, \frac{3\pi}{2}$
(D) $0, 2\pi$

Hints: b) sine function is not 1 - 1
Domain is restricted to $-\frac{\pi}{2}, \frac{\pi}{2}$ to make 1-1.

2. If any two rows or two columns in a square matrix A are interchanged, then the determinant of the resulting matrix is:

(A) |A| (B) |A-2|
(C) |A-2| (D) -A

Hints: d) properties of determinant

3. If n is even in $(a + (b))^n$ then number of middle term is:

(A) One (B) Two
(C) No middle term (D) Three

Hints: a) M.T = $(n/2 + 1)$ the term, if n is even.

4. Which of the following is not a state variable?

(A) Work (B) Internal energy
(C) Entropy (D) Pressure

Hints: a) work and heat can not determined direct.

5. The acceleration of proton in a given electric field is:

(A) 1840 times of that of electron in the same field

(B) 10×1840 times of that of electron in the same field

(C) $1/1840$ times of that of electron in the same field

(D) $10/1840$ times of that of electron in the same field

Hints: c) $F=ma$, $a = F/m$, $a \propto 1/m$, so it is 1840 times heavier than an electron so its acceleration will be less.

6. The electric field at a distance of 10cm from an isolated point particle with a charge of $10^{-9}C$ is:

(A) 1.8 N/C (B) 180 N/C
(C) 18 N/C (D) 1800 N/C

$$E = \frac{9 \times 10^9 \times 2 \times 10^{-9}}{(0.1m)^2}$$

Hints: d)

$$E = \frac{18}{0.1} = 1800$$

7. Which of the following contain maximum number of atoms?

(A) 6 mol of Sulphur(S)
(B) 2 Mol of S8

(C) 5.0 mol of SO₂

(D) 4.8dm³ of CO₂ at STP

Hints: b) No of atoms in S₈ is greater
No of atoms = $n \times N_A$, = $256 \times 6.022 \times 10^{23}$

8. Equal volume of CO and N₂ are taken in identical conditions, the correct relation between masses of two gases is:

(A) CO < N₂

(B) CO > N₂

(C) CO = N₂

(D) N₂ < CO

Hints: c) (=) representing both



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- equal
9. Choose the major product of the following reaction: $O \parallel$
 $CH_3CH_2CO \ C_2H_5$ Product
(A) $CH_3CH_2CH_2OH$
(B) CH_3CH_2OH
(C) $CH_3CH_2CH_2OH + CH_3CH_2OH$
(D) CH_3CH_2COH
Hints: c)
 $CH_3CH_2CH_2OH + CH_3CH_2OH$
10. When a permanent magnet is strongly heated?
(A) It becomes an induced magnet
(B) It loses its magnetism
(C) Its magnetism increases
(D) Its polarity reverses
Hints: b) Via Heat ferromagnet materials will lose their magnetism if heated above a point known as the Curie temperature.
11. You _____ have told me the sad news earlier.
(A) Would (B) Must (C) Should (D) Ought
Hints: c) should
12. If for the circle $x^2 + y^2 + 2gx + 2fy + c = 0$, $g^2 + f^2 - c < 0$, then it is called:
(A) Real circle (B) Point circle
(C) Imaginary circle (D) Circum circle
Hints: c) Radical vector is not tangent to the circle
13. If $x = x f(t)$ and $y = g(t)$, then $dy/dx =$
(A) $\frac{dy}{dt} \frac{dt}{dx}$
(B) $\frac{dy}{dt} \cdot \frac{dx}{dt}$
(C) $\frac{dy}{dt} \frac{dx}{dt}$
(D) All of the above
- Hints: d) Chian Rule
14. $Fudv =$
(A) uv
(B) $uv - fvdu$
(C) $u - fvdu$
(D) All of the above
Hints: $uf idv = uv$
15. You push a permanent magnet with its north pole away from you towards the loop of conducting wire in front of you. Before the north pole enters the loop
the current in the loop is:
(A) Clockwise (B) Anti-clockwise
(C) Towards left (D) Towards right
Hints: b) Anti - clockwise induced current.
16. In an ideal transformer connected to a 240v A.C with number of turns in the primary coil are 1000 and in the secondary coil are 50 turns. The output connected to the load of 10Ω . The current passes through load is:
(A) 1.2 A (B) 24 A (C) 48 A (D) 120 A
Hints: a) $I = V/R$
 $VP = 240v$
 $NP = 1000$
 $NS = 50$
 $R = 50$
 $I = ?$
 $V_s = \frac{Ns}{Np} \times Vp$
 $V_s = \frac{50}{1000} \times 240$
 $V_s = 12$
 $I = V/R, = 12/10 = 1.24$
17. An alternating current in ampere



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(D) None of the above
Hints: b) The top of valence bond is above the bottom of the conduction bond.

27. Starting from rest, a proton and an α -particle are accelerated through the same potential differences the ratio of their final speed is:
(A) $\frac{1}{2}$
(B) $1/\sqrt{2}$
(C) $\sqrt{2}$
(D) 2

Hints: c) $\frac{1}{2}mv^2 = eV_0$

$$V = \sqrt{\frac{2V_0e}{m}}$$

$$\frac{v_f}{v_a} = \sqrt{\frac{2V_0e}{m}} = \sqrt{2}$$

28. The lines $11ax + by + c = 0$, $22ax + by + c = 0$ and $33ax + by + c = 0$, are three non-parallel lines, then these three lines are concurrent if:
(A) $112233abcabc1ab$
(B) $112233abcabc1ab$
(C) $112233abcabc0abc$
(D) $1122333bc0b0babc$

Hints: c) By the concurrency of three lines

29. Equation of the normal at (x_1, y_1) to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$, is:

- (A) $(x-x_1) + (y-y_1) = 0$
(B) $(x-x_1) - (y-y_1) = 0$
(C) $(x-x_1) + (y-y_1) = 2g + 2f$
(D) $(x-x_1) - (y-y_1) = 2g + 2f$

Hints: b) Normal is perpendicular to the tangent $y - y_1 = -1/m(x - x_1)$

30. A rifle of mass M is initially at rest but free to recoil. It fires a bullet of mass m and velocity v (relative to the ground). After firing, the velocity of the rifle (relative to the ground) is:
(A) $-mv$ (B) $-Mv/m$ (C) $-mv/M$
(D) $-v$

Hints: c) $-mv/M$

31. Consider the following reaction $A + B + C \rightleftharpoons M + N + O$. The fact that enthalpy of $M + N + O$ is higher than that of $A + B + C$ indicates that:

- (A) The reaction is exothermic
(B) The reaction is endothermic
(C) Catalyst for the reaction is unnecessary
(D) The activation energy required for the reverse reaction is higher than for the forward reaction

Hints: b) Because in case of endothermic reaction ΔH of reaction will be higher.

32. X rays are:
(A) Electromagnetic waves
(B) Negatively charged ions
(C) Rapidly moving electrons
(D) Rapidly moving protons

Hints: a) Electromagnetic waves

33. London forces are stronger in:
(A) Br_2
(B) I_2
(C) F_2
(D) Cl_2

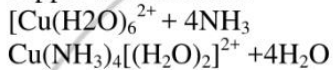


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solution is formed. The color is due to the formation of the complex:

- (A) $[\text{Cu}(\text{H}_2\text{O})_4(\text{OH})_2]$
- (B) $[\text{Cu}(\text{NH}_3)_4(\text{H}_2\text{O})_2]^{2+}$
- (C) $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$
- (D) $[\text{Cu}(\text{H}_2\text{O})_6]^{2-}$

Hints: b) Addition of NH_3 of Ammonium deep blue complex copper ammonium.



42. The number of colliding molecules of different gases calculated from kinetic molecular theory per liter per second at standard condition is of the order of magnitude of:
- (A) 10^{23}
 - (B) 10^{29}
 - (C) 10^{32}
 - (D) 10^{43}

Hints: c) The value is given in literature gas molecules magnitude is 10^{32}

43. Choose the reaction that does not require ZnCl_2 catalyst:
- (A) $\text{CH}_3\text{CH}_2\text{OH} + \text{HCl} \rightarrow \text{CH}_3\text{CH}_2\text{Cl} + \text{H}_2\text{O}$
 - (B) $\text{CH}_3\text{CH}_2\text{OH} + \text{HBr} \rightarrow \text{CH}_3\text{CH}_2\text{Br} + \text{H}_2\text{O}$
 - (C) $\text{CH}_3\text{CH}_2\text{OH} + \text{HI} \rightarrow \text{CH}_3\text{CH}_2\text{I} + \text{H}_2\text{O}$
 - (D) Both ((A) and ((B)

Hints: c) The value is given in literature gas molecules magnitude is 10^{32}

44. She is very nice to look _____.
(A) at (B) by (C) beside (D) on

Hints: a) at

45. The sigma notation for the

series

$$a_1 a_2 a_3 + a_n =$$

- (A) $n! a_1 a_2 \dots a_n$
- (B) $n! a_1 a_2 \dots a_n$
- (C) $n! a_1 a_2 \dots a_n$
- (D) All of the above

Hints: b) $\sum_{j=1}^n x_j = x_1 + x_2 + \dots + x_n$

46. If 1, 3, 3, 1 are the binomial coefficients in an expansion $(a+b)^n$, then the index n in the expansion is:

- (A) 4
- (B) 2
- (C) 3
- (D) 8

Hints: c) $n-1=3$

n = number of terms - 1

47. The in-radius of circle inscribed in a triangle with sides a, b, c is:

- (A) $\frac{\Delta}{s-a}$
- (B) $\frac{\Delta}{s-b}$
- (C) $\frac{\Delta}{s-c}$
- (D) $\frac{\Delta}{s}$

$$\Delta = \sqrt{s(s-a)(s-b)(s-c)}$$

Hints: d)

$$s = \frac{a+b+c}{2}$$

48. Conductivity is:

- (A) The same as resistivity
- (B) Expressed in Ω^{-1}
- (C) Equal to 1/resistance
- (D) Expressed in $\Omega\text{-m}^{-1}$

Hints: d) $\sigma = \frac{1}{\rho} = \frac{1}{\Omega\text{-m}}$

49. An electron travel due north through a volume in a region of uniform magnetic field that is also directed due north, it will

- (A) Be unaffected by the field
- (B) Speed up
- (C) Slow down
- (D) follow a clockwise path



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- Hints: a) Be unaffected by the field
 $F = qvB \sin \alpha = 0$
50. If the streams of protons moves parallel to each other in the same direction, then they: (A) Repeat each other
(B) Attract each other
(C) Doesn't exert force on one another
(D) Get rotate
Hints: b) Because proton have same charges direction.
51. Deficiency of iron in the body causes disease called:
(A) Anemia (B) Hemosiderosis
(C) Renal rickets (D) None of the above
Hints: b) Because Anemia is a disease due to iron deficiency.
52. Finger print region in IR spectroscopy lies between
(A) 300-600 cm^{-1}
(B) 600-1500 cm^{-1}
(C) 500-1000 cm^{-1}
(D) 1500-2000 cm^{-1}
Hints: b) 600 1500 cm^{-1}
53. Oxygen is prepared by the thermal decomposition of KClO_3 as:
 $2\text{KClO}_3 \Delta \rightarrow 2\text{KCl} + 3\text{O}_2$. How many moles of KClO_3 are required to prepare 6 moles of oxygen?
(A) 3.17 mol (B) 4.0 mol
(C) 5.01 mol (D) 2 mol
Hints: b) 3 moles of $\text{KClO}_3 = 2$ moles of O_2
1 moles of $\text{KClO}_3 = \frac{2}{3} \times 1$
6 moles = $\frac{2}{3} \times 6 = 4$ mole
54. When NaCl burns in atmosphere of chlorine, it gives:
(A) Golden yellow flame
(B) Bright orange flame
(C) Apple green flame
(D) Crimson flame
Hints: b) Flame colour of Na on flame bright orange flame due to excitation and dexcitation of electrons.
55. The general formula of cycloalkane is $\text{C}_n \text{H}_{2n}$ where:
(A) $n > 2$ (B) $n > 3$ (C) $n = 3$
(D) $n < 2$
Hints: b) Cycle alkanes $\text{C}_n \text{H}_{2n}$ ($n > 3$ because first cycle alkane is pr
So a cycle cannot be formed.
56. He said to me, —Will you lend me your cell phonen? [Select the correct indirect speech]
(A) He said to me that will I lend him your cell phone.
(B) He asked to me that will your cell phone be lent?
(C) He asked me if I would lend him my cell phone.
(D) He inquired that whether your cell phone can be lent.
Hints: c) He asked me if I would lend him my cell phone.
57. $1201 \text{dxx} 1 \square \square$, is equal to:
(A) $\frac{\pi}{2}$
(B) 2π
(C) $\frac{\pi}{4}$
(D) -2π
Hints: c)
58. If $1212 \text{mm} 01 \text{ m} \square \square \square$, then the angle formed will be:
(A) Acute (B) Obtuse
(C) Right (D) All of the above
Hints: a) $\tan \theta = \frac{m_1 - m_2}{1 + m_1 m_2}$
59. Length of the lotus rectum of 23x



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- (B) $1 - 2 \sin a \cos a$
(C) $1 + \sin a \cos a$
(D) $1 - \sin a \cos a$
Hints: c)
 $a^3 - b^3 = (a-b)(a^2+ab+b^2) \rightarrow$
 $\cos^2 a + \sin^2 a + \sin^2 a - = 1$
80. If $z = a + bi$, then $\bar{z} \cdot z$
(A) $\sqrt{a^2 + b^2}$
(B) $\sqrt{a^2 - b^2}$
(C) $(a^2 + b^2)$
(D) $-(a^2 + b^2)$
Hints: c) $z = \bar{z}$
81. A body in simple harmonic motion makes n complete oscillation in one second. The angular frequency of this motion is:
(A) $n \text{ rad}\cdot\text{s}^{-1}$
(B) $1/n \text{ rad}\cdot\text{s}^{-1}$
(C) $2\pi n \text{ rad}\cdot\text{s}^{-1}$
(D) $n/2\pi \text{ rad}\cdot\text{s}^{-1}$
Hints: c) as $f = \frac{n}{t} \Rightarrow t = 1 \text{ s}$
 $F = n$
 $W = 2\pi \text{ frads}^{-1}$
 $W = 2\pi n \text{ rads}^{-1}$
82. A particle performs simple harmonic motion of amplitude 0.02m and freq 2.5 Hz, what is its maximum speed?
(A) 0.0008 ms⁻¹
(B) 0.125 ms⁻¹
(C) 0.157 ms⁻¹
(D) 0.314 ms⁻¹
Hints: a) $v = \omega x_0$
83. Newton second is the unit of:
(A) Work (B) Angular momentum
(C) Power (D) Liner momentum
Hints d) $F\Delta t = \Delta P$
84. Number of orbital's in the 3rd shell are:
(A) 3 (B) 6 (C) 9 (D) 18
Hints: b) 1st shell K= s
2nd shell L= s, p
3rd shell M= s, p, d, = 6 orbital
85. Which element is required for maintaining the plasma concentration of vitamin A?
(A) Iron (B) Calcium (C) Zinc (D) Phosphorus
Hints: c) Zinc is trace element to maintain concentration of vitamin A in plasma.
86. She found too late that her precious art pieces were not worth a dime.
The underlined phrase means:
(A) In good state (B) New
(C) Of little value (D) Priceless
Hints: d) Priceless
87. The slope of a line is a measure of the:
(A) Height of a line
(B) Steepness of a line
(C) Thickness of a line
(D) None of the above
Hints: b) Steepness of a line
88. The line $y = mx + c$ is the tangent to the circle $x^2 + y^2 = a^2$, if:
(A) $c = a/m$
(B) $c = \pm a\sqrt{1 + m^2}$
(C) $c = \pm \sqrt{a^2 m^2 + b^2}$
(D) $c = \pm \sqrt{a^2 m^2 - b^2}$
Hints: b) Tangent to the circle $y = mx \pm c$, where $c = a\sqrt{1 + m^2}$
89. Degree of the equation $\frac{dy^5}{dx} + \frac{d^2y}{dx^2} + y = 3$, is
(A) 5 (B) 2 (C) 3 (D) 1
Hints:) power of highest order derivative
90. An A.C varies with time (t) sec



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99. The police arrested him for dangerous driving. (Select the correct passive voice:)
(A) He was arrested by the police for dangerous driving.
(B) He was arrested by the police for dangerous driving.
(C) For dangerous driving he was arrested by the police.
(D) By the police was he arrested for dangerous driving.
Hints: b) He was arrested by the police for dangerous driving.
100. If n is a positive integer and $f(x) = x^{-n}$, where $x \neq 0$, then $f'(x)$
(A) nx^{-n-1}
(B) $-nx^{-n}$
(C) $-nx^{-n-1}$
(D) nx^{-n-1}
Hints: c) power rule of derivative
101. If $x = t^2 + 3t - 2$, $y = 2 - t - t^2$, then $\frac{dy}{dx} =$;
(A) $\frac{t^2 + 3t - 2}{2 - t - t^2}$
(B) $\frac{2 - t - t^2}{t^2 + 3t - 2}$
(C) $\frac{-t - 2t}{-(2t + 1)}$
(D) $\frac{2t + 3}{2t + 3}$
Hints: c) Chain rule of derivative
102. n th term of arithmetical-Geometric series is:
a) ar^n
(b) $[a + (n - 1)d]r^{n-1}$ (C)
(c) $(n - 1)r^n$
(d) All of the above
Hints: b) $A = [a + (n - 1)d]$, n th term = Ar^{n-1}
103. If \vec{n} is a unit vector in the direction of \vec{A} , then
(A) $\vec{n} = \frac{\vec{A}}{A}$
(B) $\vec{n} = \vec{A} A$
(C) $\vec{n} = \frac{A}{\vec{A}}$
(D) $\vec{n} = \vec{A} A$
Hints: a) $\vec{a} = \frac{\vec{a}}{a}$
104. A body initially at rest, explodes into pieces of mass 2Kg and 3Kg respectively having total K.E = E , the kinetic energy of the piece of mass 2Kg after the explosion is:
(A) $E/3$ (B) $E/5$ (C) $2E/5$ (D) $3E/5$
Hints: c) $K.E = \frac{1}{2} 5v^2$, $2m = 2kg$ e = $K.E = \frac{1}{2} 2v^2 = v^2 = E$ $K.E = 5/2 E$
105. A light and a heavy body have equal kinetic energies, which one have greater momentum?
(A) The light body (B) The heavy body
(C) Both have equal momentum
(D) Not possible to say anything
Hints: b) $K.E = \frac{p^2}{2m}$, $2m K.E = p^2$ Greater mass, greater momentum
106. Grignard Reagent (RMgI) on reaction with aldehydes other than formaldehyde, the product formed on hydrolysis gives:
(A) Primary alcohol
(B) Secondary alcohol
(C) Tertiary alcohol
(D) Mixture of A, B & C
Hints: b) $R - Mg - I + CH_3 - C - H \rightarrow CH_3 - C - H + Mg OH$
107. Halogens in uncombined state exist as diatomic covalent molecule (X_2), their discrete molecules are held together by:
(A) Dipole - dipole attraction



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- (B) $E/4$
(C) $3E/4$

(D) $\sqrt{\frac{a}{4}} E$

Hints: c) $E = K.E = \frac{1}{2} mv^2 = \frac{1}{2} m \omega^2 x^2$

$$K.E = \frac{1}{2} m \omega^2 x^2 = \frac{x^2 \omega^2}{4}$$
$$= \frac{1}{2} m \omega^2 \frac{4x^2 \omega - x^2 \omega}{4} = \frac{3x^2 \omega}{4}$$
$$= \frac{3}{4} \times \frac{1}{2} m \omega^2 = \frac{3}{4} E$$

117. The rest mass of the deuteron ${}^2\text{H}$ is equivalent to energy of 1876 Mev, the rest mass of proton is equivalent to 939 Mev and that of neutron is 940 Mev.

A deuteron may disintegrate to a proton and neutron if it.

- (A) Captures an x-ray photon of energy 2Mev
(B) Emits an x-ray photon of energy 2Mev
(C) Emits an x-ray photon of energy 3Mev
(D) Captures an x-ray photon of energy 3Mev

Hints: a) $E = \Delta mc^2$ Binding energy and direction disintegrate is 2.22 MeV or 2 MeV

118. A water sample contains 3.8×10^{-2} g of mercury per kilo gram of the sample. What is the concentration of mercury in parts per million?
(A) 3.8 ppm (B) 38 ppm (C) 0.38 ppm
(D) 380 ppm

Hints: b) wt of solute = 3.8×10^{-2} g
wt of solution = 1kg wt

Wt of solute (Hg) in ppm = ?

$$\text{ppm} = \frac{3.8 \times 10^{-2} \text{g}}{1000 \text{g}} \times 10^6$$

119. A stone thrown horizontally

from the top of a tall building follows a path that is:

- (A) Circular
(B) Made of two straight line segments
(C) Hyperbolic
(D) Parabolic

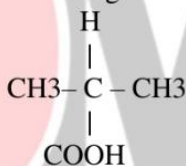
Hints: d)

120. If the amplitude of wave at a distance r from a point source is A then amplitude at a distance $2r$ will be:

- (A) $2A$ (B) A (C) $A/2$ (D) $A/4$

Hints: b) Amplitude is constant

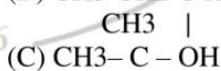
121. Choose the IUPAC name of the following:



- (A) 2-methylpropanoic acid
(B) 2-methylbutanoic acid
(C) 2-butanoic acid
(D) 2-methylethanoic acid

Hints: a)

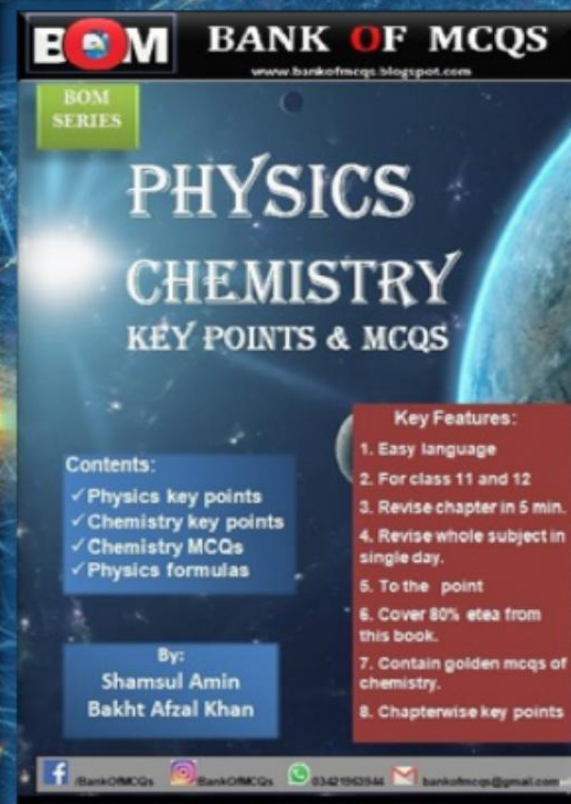
122. Arrange the following Alcohols in increase order of their boiling points.



- (A) $a < b < c$
(B) $c < b < a$
(C) $c < a < b$

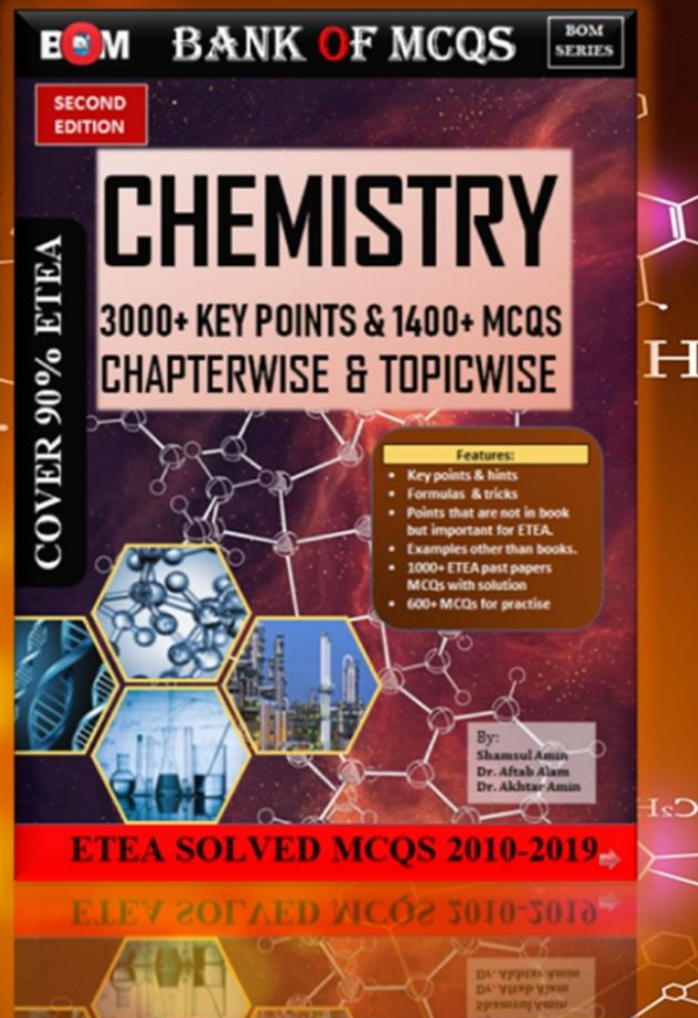
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Diencephalon, Telencephalon is divided into olfactory bulb and cerebrum while diencephalon is divided into thalamus, Hypothalamus, hippocampus and amygdala. So the correct option is Diencephalon.

56. 'ARABLE' means:
(a) Not grown since long
(b) Recently ploughed field
(c) watered the night before
(d) Fit for cultivation
57. Blue green algae, besides chlorophyll also possess another pigment known as:
(A) phycocyanin (B) phycoerythrin
(C) phycobillirubin (D) Phycobilliprotein
Hints: Beside chlorophyll Blue green algae contain phycoeyanin and phycoerythrin
58. Milk sugar is pasteurized by heating for 15 seconds at the temperature of:
(A) 60 °C
(B) 71 °C
(C) 50 °C
(D) 80 °C
Hints: Milk can be pasturized by exposing milk to 72°C for 15 second this process is called high Temperature short time pasteurization (HTST).
59. Which one of the following is most ionic?
(A) NaCl
(B) MgCl₂
(C) KCl
(D) AlCl₃
Hints: (c) KCl is the most ionic

among the given ionic compounds due to largest difference b/w the metal (K) and non-metal (Cl).

60. The compound used in borax bead test for the detection of basic radicals to form colored bead is:
(A) H₂BO₂
(B) (C₂H₅)₃BO₃
(C) Cu₂B₆O₁₁·5H₂O
(D) Na₂B₄O₇·10H₂O
Hints: (d) in borax bead test, powdered borax (Na₂B₄O₇·10H₂O) is heated on loop of platinum on flame. The borax swells up and then melts into a colorless glass – like bead on the loop. Then little amount of substance is placed on the bead and heated in oxidizing and then is reducing flame. The basic radicals are identified from the colors of the beads.
61. Milk of magnesia is used for treatment of acidity in stomach, its formula is:
(A) Mg(OH)₂
(B) MgSO₄
(C) Ca(OH)₂
(D) CaSO₄
Hints: (a) Milk of magnesia (Mg(OH)₂) is basic in nature and is used for treatment of acidity in stomach.
62. A battery is marked 9.0V. What does this mean?
(A) Each coulomb of charge from the battery supplies 9.0J of electrical energy to the whole circuit.
(B) The battery supplies 9.0J to an external circuit for each coulomb of charge.



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400 Nm⁻¹. What is the tension in the spring when its overall length is 70mm?

- (A) 8.0N (B) 28N (C) 160N
(D) 400N

Hints: $F = K(L_1 - L_2)$

69. Which thermodynamic temperature is equivalent to 501.85 °C?

- (a) 775.00 K
(b) 774.85 K
(c) 228.85K
(d) 228.70K

Hints: (c)

70. Which of the following ions play important role in the transport of carbon dioxide?

- (A) Sodium
(B) Potassium
(C) Bicarbonate
(D) Chloride

71. Incomplete double circulation is found in:

- (A) Aves
(B) Fishes
(C) Amphibians
(D) Mammals

Hints: Amphibians have incomplete double circulation because they have a single ventricle which receive both, oxygenated and deoxygenated blood.

Fishes: Fish have single circulation. Aves and mammals have complete double circulation.

72. Choose the correct sentence.

- (A) We bought some new clothing.
(B) We bought some new clothing.
(C) We bought some new piece of clothing
(D) We bought some new pieces of clothing.

73. If a hole is bored through the center of the earth and a pebble is dropped in it. Then it will:

- (A) Execute SHM
(B) Drop to the other side
(C) Stop at the center of the earth
(D) None of the above

Hints: (a)

74. Which of the following animal is included in protostome?

- (a) Sea horse (b) Sea mouse
(c) sea cucumber (d) Sea lion

Hints: Protostomes are those organisms in which the first opening in the embryo is mouth which develops from blastophere. (Annelids, mollusks, arthropods)
The correct option is sea mouse (Aphrodite) which is belongs to annelids.

Seahorse-fish-deuterostomes.

Sea cucumber-echinoderms-deuterostomes

Sealion-mamal-deuterostomes

75. How many waling legs are present in arachnids?

- (A) 4 (B) 6 (C) 8 (D) 10

Hints: Arachnids is a class of arthropods which have eight legs, like spider, scorpion etc.

76. A ____ child, she was soon bored in class; she already knew more mathematics than her junior school teachers.

- (A) Contemporary (B) Lethargic
(C) Obdurate (D) Precocious

77. Sea-fungi is related to:

- (A) Zygomycota (B) Ascomycota
(C) Basidiomycota (D)

Deutromycota

Hints: Ascomycota are fungi which



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skeleton is made up from the pressure of water inside the body which is called hydrostatic skeleton, only corals have a skeleton which is made up from calcium carbonate so the correction option is corals.

138. Lungs are _____ in origin.

- (A) Ectodermal
- (B) Endodermal
- (C) Mesodermal
- (D) Preformed

139. The particular array of chromosomes that an individual possessed is called its:

- (A) Genotype
- (B) Phenotype
- (C) Karyotype
- (D) Genome

Hints: The complete set of chromosome which are present in an organism is called karyotype.

140. 'APPRAISE' means:

- A) Praise a man out of place
- B) (B) Tell a story at bed time.
- C) Evaluate the equality of
- D) Do shopping in a bazar

141. An Accuse develops:

- (A) 2-Ascospores
- (B) 4-Ascospores
- (C) 6-Ascospores
- (D) 8-Ascospores

Hints: Accuse are the sec like structure of Ascomycota in which eight (8) asco-spores develops.

142. The cell wall of fungus like protista is composed of:

- (A) Chitin
- (B) Cellulose
- (C) Murein
- (D) Lignin

Hints: The cell wall of fungus like protista is made up gram cellulose not fungi.

143. Which is incorrect statement?

- (a) The ionic bonds are no

directional in character.

(b) The crystals of covalent compounds are made up of molecules.

(c) The covalent bonds are rigid and no directional.

(d) Ionic ompounds have high melting point and Boiling point.

Hints: (c) Covalent bonds are always rigid and directional in nature. The covalent bonds around a central atom in a molecule lie at definite angles.

144. In which compound the bond angle is maximum?

- (A) Methane
- (B) Beryllium chloride
- (C) Ammonia
- (D) Boron trifluoride

Hints: (b) Beryllium chloride molecule is linear and the bond angle b/w the two bonds is 180° . In methane, ammonia and boron trifluoride, the bond angle are 109.5° and 120° respectively.

145. Which is not used in calculating the lattice energy of crystalline solids?

- (A) Haber process
- (B) Born Haber cycle
- (C) Hess's law
- (D) Enthalpy changes

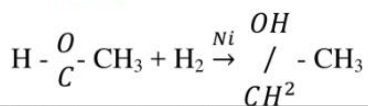
Hints: (a) Haber-process is not used to calculate the lattice energy of crystalline solids. It is the method of preparation of ammonia.

146. A mass accelerates uniformly when the resultant force acting on it:

- (a) Is zero
- (b) Is constant but not zero



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175. Which of the following compounds will give a positive test with Fehling's solution?

- (A) Acetone (B) Ethyl acetate
(C) Formaldehyde (D) Acetic acid

Hints: (c) Fehling's solution ($\text{CuCl}_2 + \text{NaOH} + \text{tartaric acid}$) is a weak oxidizing agent and can oxidize only more reactive carbonyl compounds like aldehydes and can't oxidize ketones, carboxylic acids and esters etc. It forms red precipitate of Cu_2O with aldehydes.

176. Choose the compound in which hydrogen bonding is not possible:

- (A) H_2O
(B) HCl
(C) CH_3COOH
(D) CH_3OCH_3

Hints: d) Hydrogen bonding is possible among molecules in hydrogen is covalently bonded to F, O or N atom. Among HCl molecules, the intermolecular forces are dipole – dipole interaction which are weaker than H-bonding.

177. A ball is dropped from the roof of a very tall building. What is its velocity after falling for 5.0s?

- (A) 1.96 m/s
(B) 9.80m/s
(C) 49.0m/s
(D) 98.0m/s

Hints: $v_f = 0 + (9.8)(5) = 49\text{m/s}$

178. In liquid metal fast breeder reactor the moderator used is:

- (A) Graphite (B) Heavy water

(C) Boron rods (D) Not required.

179. The de-Broglie wavelength of a rifle bullet of mass 0.02kg which is moving at a speed of 300ms⁻¹ is

(where $h = 6.63 \times 10^{-34}\text{Js}$)

- (A) $7.3 \times 10^{-34}\text{m}$
(B) $1.1 \times 10^{34}\text{m}$
(C) $1.8 \times 10^{-35}\text{m}$
(D) $9.9 \times 10^{-34}\text{m}$

Hints: (b) From de-Broglie's equation, we have

$$\lambda = h/mv$$

$$\lambda = 6.63 \times 10^{-34} / (0.02 \times 300)$$

$$\lambda = 1.105 \times 10^{-34}\text{m}$$

180. The theory of new creation was composed by:

- (A) George Cuvier (B) James Hutton
(C) Lovis Agassiz (D) Wallace

181. The bone dissolving cells are called:

- (A) Osteoclast (B) Osteoblasts
(C) Osteocytes (D) Fibroblast

Hints: Osteoclast are the cells which dissolve the old bone cell by the cysosomal enzymes osteocytes and osteoblast are bone forming cells Fibroblast are muscle forming cell.

182. An 'elegy' is a poem written:

- (A) In the memmory of little child
(B) On the death of someone dear.
(C) On the sighting of an old tutor
(D) In the love of dear sweetheart.

183. The temperature required for vernalization is approximately:

- (A) 2°C
(B) 3°C
(C) 4°C
(D) 10°C



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it hits the ground is:

- a) 10 ms^{-1}
- b) 15 ms^{-1}
- c) 22 ms^{-1}
- d) 30 ms^{-1}

Hints: (c) $\sqrt{vf^2x + vf^2y} = \sqrt{(20)^2 + (10)^2} = \sqrt{500} = 22 \text{ms}^{-1}$

9. How much electrical energy is required to move 4.00mC of charge through a potential difference of 35.0V?
- a) $111 \times 10^{-4} \text{ J}$
 - b) 0.144 J
 - c) 144 J
 - d) 9000 J

Hints: (b) $V = \frac{W}{q}$, $W = qV$
 $= 4.00 \times 10^{-3} \text{ C} \times 36.0 \text{ V} = 0.144 \text{ J}$

10. Aboriginal means:
- a) Alley
 - b) Native
 - c) Migrate
 - d) Displaced
11. The wave nature of electron is illustrated by its:
- a) Photoelectric effect
 - b) Compton effect
 - c) Penetrating effect
 - d) Diffraction

Hints: (d) Diffraction of electron as demonstrated by division and germer proof of wave nature of electron.

12. Layers of carbon atoms in graphite are held together by:
- a) Vander Waals forces
 - b) Covalent bonds
 - c) Coordinate covalent bonds
 - d) All of the above

Hints: Layers of carbon atoms in graphite are held together by weak vander waal's forces. Graphite is soft because the layers can slide over each other.

13. The broglie's relation between momentum and wavelength for an electron is given by:

- a) $p = h\nu$
- b) $\lambda = \frac{h}{p}$
- c) $p = \frac{h}{\lambda}$
- d) $E = h\nu$

Hints: (d) de- Borglie's equation showed the dual nature of electron.

$\lambda = \frac{h}{mv}$ OR $\lambda = \frac{h}{p}$

14. $\sin 40^\circ \cos 50^\circ + \cos 40^\circ \sin 50^\circ =$
- a) 1
 - b) -1
 - c) 0
 - d) ∞
- Hints: $\sin 40^\circ \cos 50^\circ + \cos 40^\circ \sin 50^\circ = \sin(40^\circ + 50^\circ) = \sin 90^\circ = 1$
15. The Concept of complex numbers as a + b was given in 1795 by: _____
- (a) Gauss
 - (b) Archimedes
 - (c) George Cantor
 - (d) Rene Descartes
- Hints: The concept of complex number as a + ib was given in 1795 by Gauss.

16. $(-1)^{\frac{-33}{2}}$ is equal to:

- (a) -1
- (b) i
- (c) 1
- (d) -i

Hints:

$(-1)^{\frac{-33}{2}} = -i$: since $(-1)^{\frac{-33}{2}} = \sqrt{-1}$

$= i^{-33} = \frac{1}{i^{33}} = \frac{1}{i^{32} \cdot i} = \frac{1}{1 \cdot i} = -i$

17. Which of the following statements



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given matrix.

76. Which of the following is not property of fourth roots of unity?
(a) Complex fourth roots of unity are conjugate of each other.
(b) Sum of the fourth roots of unity is 0.
(c) Product of four roots of unity is a.
(d) Real fourth roots of unity are additive inverse of each other.

Hints: Fourth roots of unity are 1, -1, I, -I and the product is not equal to 1

77. A ball of mass 'm' is attached to a string of length 'r' and is swing in a horizontal circle with constant angular velocity. What is the work one on the ball by the tension in the string?
(a) $2\pi m r^2$
(b) $\pi m r^2$
(c) $2 L m r$
(d) Zero

Hints: (d) In this case tension is equal to centripetal force no work is done by tension or centripetal force.

78. Two identical objects A and B move around separate circles of identical diameter. The is
(a) 1/4 (b) 1/2 (c) 2 (d) 4

Hints: (a)

$$F_c = \frac{mv^2}{r} = \frac{mr^2\omega^2}{r} = mr^2\omega^2 = \frac{4\pi mr}{T^2}$$

$$\text{SO } F_c = \frac{1}{T^2} \cdot \frac{FA}{FB} = \frac{1}{(2TA)^2} \times T^2 B = \frac{1}{4}$$

79. A satellite of weight w, on the surface of the earth of radius R, is projected into a circular orbit of radius 2R. the gravitational force acting on the satellite in orbit is:

- (a) W/2 (b) W/4 (c) 4W (d) W

$$FG = W = \frac{GMm}{R^2}$$

Hints:

$$\text{'FG = W'} = \frac{GMm}{(2R)^2} = \frac{GMm}{4R^2} = \frac{w}{4}$$

80. Some government officials have an irritating habit of throwing their weight around everywhere. The italicized idiom means:

- (a) To redress public grievances.
(b) To deliver satisfactory services.
(c) To use power and influence.
(d) To Avail facilities.

81. Lime water is saturated solution of:

- (a) Mg(OH)₂
(b) Ca(OH)₂
(c) Ba(OH)₂
(d) KOH

Hints: Lime water is saturated solution of Ca(OH)₂

82. Goldberg and Waage stated:

- (a) Acid base equilibria
(b) Periodic law
(c) Law of mass action
(d) Rule maximum multiplicity

Hints: Gulberg and waag stated "law of mass action" or "Law of chemical equilibrium".

83. Silicones are:

- (a) Synthetic polymers
(b) Natural polymers
(c) Non polymeric compound
(d) None of the above

Hints: Silicones are synthetic polymers containing si-o-si-o-si linkages along with alkyl groups as side chains.

84. Which of the following is a factor of:

$$x^3 + 2x^2 - 5x - 6?$$



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(c) Decrease in the number of collision.

(d) Increase in the number of effective collision.

Hints: An increase in temperature increase the rate of chemical reaction by increasing the number of effective collisions among the reacting molecules.

93. If the salt bridge is not employed between two half cel's in the Galvanic cell. Then the effect on the voltage would be:

- (a) Decrease rapidly (b) Decrease slowly
(c) Drops to zero (d) Increase slowly

Hints: When salt bridge is not employed between two half cells in Galvanic cell, the circuit is not completed and voltage drops to zero.

94. In the from of partial fractions the rational function $\frac{x}{(x-1)^2(x+1)}$ can be written as:

- (a) $\frac{A}{x+1} + \frac{B}{(x-1)^2}$
(b) $\frac{A}{(x-1)^2} + \frac{Bx+C}{x+1}$
(c) $\frac{A}{(x-1)} + \frac{B}{(x-1)^2} + \frac{D}{x+1}$
(d) $\frac{A}{(x-1)} + \frac{Bx+C}{(x-1)^2} + \frac{D}{x+1}$

Hints: $\frac{x}{(x-1)^2} = \frac{A}{(x-1)} + \frac{B}{(x-1)^2} + \frac{D}{x+1}$

95. If A and B are two mutually exclusive events, then $P(A \cap B) =$

- (a) $P(A) \cdot P(B)$
(b) $P(B) \cdot A$
(c) $P(A) + P(B)$
(d) $P(A \cap B)$

Hints: $p(A \cup B) = P(A) + P(B)$ since $P(A \cap B) = 0$

96. Which of the following is true:

- (a) $AM > GM > HM$
(b) $AM < GM < HM$
(c) $GM > AM > HM$
(d) $AM > HM > GM$

Hints: $AM > GM > HM$

97. The displacement 'x' of a particle at time 't' is given by $x = 10 \sin 4t$. the particle oscillates with period:

- (a) $\frac{\pi}{10}$ s
(b) $\frac{\pi}{5}$ s
(c) $\frac{\pi}{4}$ s
(d) $\frac{\pi}{2}$ s

$X = 10 \sin 4t \rightarrow (1)$

Hints: (d)

$X = X_0 \sin wt \rightarrow (2)$

Comparing eq (1) and (2) which shows that

$\omega = 4, \frac{2\pi}{T} = 4, T = \frac{2\pi}{4} = \frac{\pi}{2}$ s

98. The internal energy of a system is:

- (a) The total change in momentum of all the molecules in the system.
(b) The sum of kinetic energies and the potential energies of the system.
(c) The thermal energy required to raise the temperature of the system by 1K.
(d) The total potential energies of the system.

Hints: (b) Internal energy = sum of K.E and P.E of all the molecules of a system.

99. The energy of a wave pulse is proportional to its:

- (a) Amplitude squared



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Hints: Primary alkylhalides ($\text{CH}_3\text{CH}_2\text{-I}$) readily undergo SN^2 reactions in a non-polar solvent.

132. Ketones react with Grignard reagent to form an addition product on Hydrolysis gives a:

- (a) Primary alcohol (b) Secondary alcohol (c) Tertiary alcohol (d) Acetone

Hints: Ketones react with Grignard's reagent to give an addition product which on hydrolysis give tertiary alcohol.

133. Methanol is also known as:

- (a) Wood spirit (b) Denatural alcohol (c) Grain alcohol (d) Rectified spirit

Hints: Methanol is known as "wood spirit" because for the first time obtained by the destructive distillation of wood.

134. If ${}^n\text{C}_6 = {}^n\text{C}_{12}$ then $n =$

- (a) 18 (b) 12 (c) 0 (d) 4

Hints: If ${}^n\text{C}_6 = {}^n\text{C}_{12}$ then $n = 6 + 12 = 18$

135. $\int_1^2 x dx =$

- (a) 3 (b) 2 (c) 2/3 (d) 3/2

Hints: $\int_1^2 x dx = \frac{x}{2} \Big|_1^2 = \frac{3}{2}$

136. Latus rectum of the parabola $3x^2 = 4y$ is:

- (a) 4/3 (b) -4/3 (c) 3/4 (d) -3/4

Hints: Latus rectum of the parabola

$3x^2 = 4y$ is $\frac{4}{3}$, $x^2 = \frac{4}{3}y$

137. Wire A has the same length and

resistance as wire B. the diameter of A is three times that of E. what is the ratio of the resistivity of wire A to that of wire B?

- (a) 1 : 9 (b) 9 : 1 (c) 3 : 1 (d) 1

Hints: () Resistivity is independent of area so ratio should be 1 : 1

138. A 100 watt lamp is connected to a 240 V terminal. What is the number of electrons leaving the lamp every second?

- (a) 2.5×10^{15} (b) 1.5×10^{19} (c) 6.3×10^{20} (d) 1.5×10^{23}

Hints:

139. Three resistors of resistances 2Ω , 4Ω and 6Ω are connected in parallel across a D.D supply. The ratio of the current through the 2Ω resistor to the current through the 4Ω resistor is:

- (a) 1 : 2 (b) 2 : 1 (c) 1 : 4 (d) 1 : 6

$I = \frac{V}{R} \Rightarrow I_1 = \frac{V}{2}$ and $\frac{V}{4} = I_2$

Hints:

$\frac{I_1}{I_2} = \frac{V}{R} \times \frac{4}{V} = 2 : 1$

140. I shall see you tomorrow ____ I have to work late ____

- (a) in case (b) unless (c) if (d) as

141. Which of the following will give yellow crystalline precipitate of iodoform with iodine and sodium hydroxide solution?

- (a) 2-methyl-2-propanol (b) 2-Propanol (c) 1-Butanol (d) 1-Propanol

Hints: All those primary and secondary alcohols which on



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coefficient of temperature.

150. Blot and smudges implies:

- (a) Spot of ink and dirty marks
- (b) Foul smelling polluted water
- (c) Bracelet and bangles of gold
- (d) Beautiful neat way of writing.

151. Which statement about the carbon, 1 group is not true?

- (a) The carbonyl carbon is sp^2 hybridized.
- (b) The bond angle among the three atoms attached to the carbonyl carbon are 120° .
- (c) The three atoms attached to the carbonyl carbon form atom planar geometry.
- (d) The carbonyl group forms resonating structures.

Hints: A carbonyl carbon is sp^2 -hybridized. The bond angle between any two atoms is 120° all the atoms attached to carbonyl carbon are in the same plane.

152. In the conversion of wine to vinegar:

- (a) Ethanol is oxidized to acetic acid.
- (b) Ethanol is reduced to acetic acid.
- (c) Methanol is oxidized to acetic acid.
- (d) Methanol is reduced to acetic acid.

Hints: Ethanol is oxidized to acetic acid during conversion of wine to vinegar. Vinegar is a dilute solution of acetic acid.

153. Choose the amphoteric oxide:

- (a) Rubidium oxide
- (b) Sulphur trioxide
- (c) Barium oxide
- (d) Antimony oxide.

Hints: Oxides of less electropositive metals like antimony oxide etc. are amphoteric in nature.

154. If n is even, then the middle term in the expansion $(a + b)^n$ is:

- (a) $\left(\frac{n+1}{2}\right)^{th}$
- (b) $\left(\frac{n+2}{2}\right)^{th}$
- (c) $\left(\frac{n}{2} + 1\right)^{th}$
- (d) Both B. and C

Hints: If n is even, then the number of terms is odd so middle term = $\frac{n}{2} + 1 = \frac{n+2}{2}$

155. $\int e^{10x} dx =$

- (a) $e^{10x} + C$
- (b) $\frac{e^{10x}}{10} + C$
- (c) $10e^{10x} + C$
- (d) $(10e)^x + C$

Hints: $\int e^{10x} dx = \frac{e^{10x}}{\frac{d}{dx}(10x)} = \frac{e^{10x}}{10} + c$

156. $\frac{d}{dx} \sin^{-1} x =$

- (a) $\frac{1}{\sqrt{1-x^2}}, x \in (-1, 1)$
- (b) $\frac{1}{\sqrt{x^2+1}}, x \in R$
- (c) $\frac{1}{\sqrt{1-x^2}}, x \in (-1, 1)$
- (d) $\frac{-1}{\sqrt{x^2+1}}, x \in R$

Hints: $\frac{d}{dx} \sin^{-1} x = \frac{1}{\sqrt{1-x^2}}, x \in (-1, 1)$

157. A wire loop is placed in a magnetic field. The magnetic flux passing through the loop is maximum when the angle between the field lines and the normal to the surface area of the wire is:

- (a) 0°
- (b) 45°



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C) Kg m s² D) Kg m

29.

$$\tan = \frac{0}{2}$$

a) $\frac{\pm\sqrt{1+\cos\theta}}{1-\cos\theta}$

b) $\frac{\pm\sqrt{1-\cos\theta}}{1+\cos\theta}$

c) $\frac{1+\cos\theta}{1-\cos\theta}$

d) $\frac{1-\cos\theta}{1+\cos\theta}$

Hints:

30.

The best known fuel cell and the most highly developed is the hydrogen/oxygen fuel cell known as the:

- A) Proton ceramic cell
- B) Molten carbonate fuel cell
- C) Bacon cell
- D) Direct methanol fuel cell

31.

'INNUMERABLE' means:

- A) In equal numbers
- B) Numerically scant
- C) Not in a formation
- D) Too many to count

32.

A body of mass m , moving at velocity v , collides with a stationary body of the same mass and sticks to it. Which row describes the momentum and kinetic energy of the two bodies after the collision?

Momentum	Kinetic energy
A) mv	$\frac{1}{2}mv^2$
B) mv	$\frac{1}{2}mv^2$
C) $2mv$	$\frac{1}{2}mv^2$
D) $2mv$	mv^2

33.

If a system of linear equations has no solution, it is called:

- A) Invertible
- B) Indeterminate
- C) Consistent
- D) Inconsistent

34.

An organic compound having molecular formula C_2H_6O can exhibit functional group isomerism. Select the correct isomers:

- A) Methanol and methoxy methane
- B) Ethanol and ethoxy ethane
- C) Ethanol and methoxy methane
- D) Methanol and ethoxy ethane

35.

Which of the following pairs contains one vector and one scalar quantity?

- A) Displacement : acceleration
- B) Force : kinetic energy
- C) Momentum : velocity
- D) Power : speed

36.

The period of $\sin x$ is:

- A) 2π
- B) π
- C) $\frac{\pi}{2}$
- D) $\frac{\pi}{4}$

37.

Those substances which are attracted in a magnetic field are called:

- A) Ferromagnetic substances
- B) Diamagnetic substance
- C) Antiferromagnetic substances
- D) Paramagnetic substances

38.

If a force of 10N makes an angle of 60° with y-axis, its x-component is:

- A) 0.776N
- B) 8.66N
- C) 7.76N
- D) 5.0N

39.

If A and B are any two events defined in a sample space, then $P(A - B) =$

- A) $P(A) - P(A \cap B)$
- B) $P(A \cap B) - P(A)$
- C) $P(A) - P(A \cap B)$
- D) $P(A \cap B)$



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- A) The average kinetic energy increases
- B) The maximum kinetic energy increase
- C) The average kinetic energy decreases
- D) The minimum kinetic energy increases

49.

A circle passing through the vertices of any triangle is called:

- A) Semi circle B) Circumcircle
- C) Inctrcle D) Escribed circle

50.

The impurities in water are expressed by unit, parts per million (PPm) which is equal to:

- A) $\frac{\text{wt or volume of solute}}{\text{wr or volume of solution}} \times 10^6$
- B) $\frac{\text{wt or volume of solution}}{\text{wr or volume of solute}} \times 10^6$
- C) $\frac{\text{wt or volume of solute}}{\text{wr or volume of solvent}} \times 10^6$
- D) $\frac{\text{wt or volume of solvent}}{\text{wr or volume of sloute}} \times 10^6$

51.

Marvin was arrested and charged... murder.

- A) Into B) Over
- C) With D) Near

52.

What is the internal energy of an object?

- A) It is the energy associated with the object's movement through space
- B) It is the energy associated with the random movement of the molecules in the object
- C) It is the energy due to the

attractions between the molecules in the object

- D) It is the sum of all the microscopic potential and kinetic energies of the molecules in the object

53.

If A and B are two sets, then $A \cap B /$

- A) $(A \cap B) / B$ B) $(A \cap B) /$
- C) $A' \cap B' D$ D) $(B \cap A) /$

54.

The reduction of 2-butyne to n-butane in laboratory involves:

- A) The use of an oxidizing agent such as $\text{Cr}_2\text{O}_7^{2-}$ in the presence of acids.
- B) The use of strong base such as KOH along with NaNH_2
- C) The use of hydrogen gas in the presence of Nickel as catalyst
- D) The use of Al_2O_3 as catalyst and water in the form of steam

55.

Which of the following physical phenomena cannot be described only by the wave theory of the electromagnetic radiation?

- A) Diffraction B) Interference
- C) Polarization D) Photoelectric effect

56.

If A is a non-singular matrix, then A^{-1}

- A) $\frac{A}{A}$ B) $\frac{\text{adj } A}{A}$ C) $\frac{A^{-1}}{A^{-1}}$ D) $\frac{1}{A^{-1}}$
- A) $\frac{A}{A}$ B) $\frac{\text{adj } A}{A}$ C) $\frac{1}{A^{-1}}$ D) $\frac{A}{\text{adj } A}$

Hints: $A^{-1} = \frac{1}{A} \cdot \text{Adj } A$

57.



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Acetic acid reacts with thionyl chloride. The product obtained is:

- A) $\text{CH}_3\text{COCl} + \text{SO}_2 + \text{HCl}$
- B) $\text{CH}_3\text{Cl} + \text{CH}_3\text{COCl} + \text{SO}_2$
- O
- C) $\text{CH}_3\text{COCH}_3 + \text{SO}_2$
- D) None of the above

58.

Which statement about nuclei is correct?

- A) Different isotopic nuclei have different proton numbers
- B) Nucleon numbers of nuclei are unchanged by the emission of α particles
- C) For some nuclei, the nucleon number can be less than the proton number
- D) In some nuclear processes, mass-energy is not conserved

59.

Let Z be the set of all integers and \circ is defined as $a \circ b = 3a - b$. If $a, b \in Z$, then \circ is not:

- A) Commutative
- B) Associative
- C) Distributive
- D) All of the above

60.

Which of the following is not an electrophile?

- A) H_3O^+
- B) AlCl_3
- C) CN^-
- D) BF_3

61.

'CHUCKLE' means:

- A) Bouquet of flowers
- B) Displeasing manner
- C) Suppressed laughter
- D) Religious movement

62.

A wire of resistance 3.0Ω is

stretched to twice its original length.

The resistance of new wire will be:

- A) 1.5Ω
- B) 3.0Ω
- C) 6.0Ω
- D) 12.0Ω

63.

The distance d from the point $P(x_1, y_1)$ to the line $ax + by + c = 0$ is

given by $d =$

- A) $\frac{ax - by + c}{\sqrt{a^2 - b^2}}$
- B) $\frac{ax + by + c}{\sqrt{a^2 - b^2}}$
- C) $\frac{\sqrt{a^2 - b^2}}{ax + by + c}$
- D) $\frac{\sqrt{a^2 - b^2}}{ax + by + c}$
- E) Hints: $d = \frac{ax + by + c}{\sqrt{a^2 + b^2}}$

64.

Which mixture can be separated by filtration?

- A) Sand and water
- B) Petrol and water
- C) Salt and sugar
- D) NaCl and water

65.

In vacuum all electromagnetic waves have the same:

- A) speed
- B) energy
- C) Frequency
- D) wavelength

66.

$\int \sec^2 10x dx =$

- a) $\frac{\csc^2 10x}{10} + c$
- b) $\frac{\tan 10x}{10} + c$
- c) $\frac{\sec 10x}{10} + c$
- d) $\frac{\sec 10x + \csc 10x}{10} + c$

Hints: $\frac{\tan 10x}{10}$

67.

The hydrolysis of urea into ammonia and CO_2 takes place in the presence of a catalyst Urease as shown below

- A) Homogeneous catalysis
- B) Heterogeneous catalysis
- C) Enzyme catalysis
- D) None of the above



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radio frequency
D) Radio frequency > microwave >
Lr. > visible > u.v

135.

Reaction in which two or more light nuclei use together to form a single nuclide is categorized as:
A) Nuclear fission B) Chemical reaction
C) Nuclear fusion D) None of the above

136.

Sin/ is
a) $\frac{1}{2}(e^{-x} + e^{-x})$
b) $\frac{1}{2}(e^x + e^{-x})$
c) $\frac{1}{2}(e^{-x} - e^{-x})$
d) $\frac{1}{2}(e^x - e^{-x})$

137.

The log of rate constant of a reaction is:
A) Directly proportional to temperature
B) Inversely proportional to temperature
C) Not affected by temperature
D) Not dependent on the activation energy

138.

The derivative of $-8x^5$ is:
A) A-rays B) α -particles
C) Y-rays D) neutrons

139.

The amount of ionization produced in a gas is the most due to:
A) -8 B) $-40x$
C) $-40x^5$ D) $-40x^4$

140.

What energy (in joules) would a photon of light with a wave length 3

$\times 10^{-4}$ cm ($h=6.6 \times 10^{-34}$ Jsec) have
A) 2.2×10^{-44} B) 3.3×10^{-21}
C) 6.6×10^{-20} D) 6.6×10^{-48}

141.

Select the correct sentence:
A) But brightly polished were the old shoes
B) Old were the shoes but brightly polished
C) The shoes were old but polished brightly
D) The shoes were old but brightly polished

142.

The state of thermal equilibrium between two systems is determined by equality of:
A) Pressure B) Volume
C) Temperature D) mass

143.

$\int dx$
A) 3 B) $3/2$ C) 2 D) $2/3$

144.

Which of the following is not a polymer?
A) Urea B) Starch
C) Polythene D) Natural rubber

145.

In liquid metal fast breeder reactor the moderator used is:
A) Graphite B) Heavy water
C) Boron rods D) Not required

146.

If the point P1 and P2 have the coordinates $x_1 = 7$, $x_2 = -9$, then $[P_1P_2]$
A) -2 B) 16
C) 2 D) -16

147.

Which of the following reagents



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- | S. No | MCQs |
|-------|--|
| 1. | Selagiella is the living member of:
A) Psilopsida B) Lycopsida
C) Sphenopsida D) pteropsida |
| 2. | Which of the following misnamed?
A) Aniline B) Methyl naphthalene
C) Carboxyl benzene D) Benzene sulphonic acid |
| 3. | On the ground the gravitational force on a satellite is W. What is the gravitational force on the satellite when at a height R/50, where R is the radius of the earth?
A) 1.04W B) 1.02W C) 0.50W
D) 0.96W
Hints:
$W = \frac{gmem}{re^2}$
$W = ?$
$W = \frac{gmem}{(re - \frac{re}{50})^2} = \frac{gmem}{(\frac{51}{50}re)^2} = \frac{1}{1.04} \frac{gmem}{re^2}$
$W = 0.96w$ |
| 4. | Contraction can be sustained for a long period of time by:
A) Skeletal muscles B) Smooth muscles
C) Cardiac muscles D) All of the above
Hints: contraction can be sustained for a long period of time by smooth muscles because the cells are spindle shaped and exist as single cells which are arranged in bundles or sheets or layers. |
| 5. | Aromatic compounds generally burn with smoky flame because:
A) Skeletal muscles B) Smooth muscles
C) Cardiac muscles D) All of the above |
| 6. | If a wave can be polarized, it must be:
A) An electromagnetic wave
B) A stationary wave
C) Transverse wave
D) A longitudinal wave
Hints: only transverse wave can be polarized |
| 7. | Amount of DNA in bacterial cell is:
A) 1% B) 2% C) 3% D) 4% |
| 8. | The smaller the value of Pkg:
A) The weaker the base B) The stronger the base
C) The stronger the acid D) None of the above |
| 9. | In the nuclear reaction shown below what is the value of coefficient $_{\gamma}$?
$_{92}U_{235} + _0n_1 \dots _{56}Kr_{89} + _{36}Y_{94} + 200MeV$
A) 0 B) 1 C) 2 D) 3 |
| 10. | Have you got a computer? She said. Select the correct indirect speech:
A) She wanted to find whether I have a computer.
B) She wanted to know whether I |



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- poly peptide chains.
35. Which of following functional groups are deactivating and not ortho, para directing?
A) $-R$ B) $-COR$ C) $-NH_2$ D) NR_2
Hints: COH is meta directing and deactivating because all m directing substitutes are deactivating $R1NH_2$ and NR_2 are opposite directing and activating.
36. In which of the following pairs are both substances normally crystalline?
A) Copper and diamond B) Copper and glass
C) Copper and rubber D) Diamond and glass
Hints: copper is metallic solid and diamond is covalent crystallize solids glass and rubber are amorphous solids.
37. Urea formation occurs in:
A) Kidney B) Liver C) Spleen D) Lungs
Hints: urea formation occurs in liver. Ammonia is highly toxic substances, so it is first converted in to a less toxic substance I. e. urea in the liver and then it is removed by the kidney in urine.
38. Which one of the following is strongest acid?
A) CH_3COOH B) CH_3CH_2COOH
C) $C_6H_5CO_2H$ D) FCH_2COOH
Hints: electron denoting group when subtended into carbon dioxide acid decreases the acid strength
- while electron attracting (with drawing) group increases the strength of acids halogen are electron attracting groups and thus increase the strength of acid
39. Ultraviolet rays differ from the X-rays in that ultraviolet rays:
A) Cannot be diffracted
B) Cannot be polarized
C) Have a low frequency
D) Do not affect a photographic plate
40. 'ALLUSION' means:
A) An idea haunting one's mind
B) A casual or indirect reference
C) Have a low frequency
D) Do not affect a photographic plate
41. Phagocytosis, pinocytosis and autophagy are the functions of:
A) Golgi-Apparatus B) Lysosomes
C) Peroxisomes D) Glyoxisomes
42. To distinguish among primary, secondary and tertiary alcohols which of the following tests is used?
A) Benedicts reagent B) Tollen's reagent
C) Lucas test D) None of the above
Hints: Lucas ten is used to distinguish between primary, see and ertiary alcohols. Alcohols is treated with $(HCl + ZnCl_2)$ reagent tertiary alcohols react immediately secondary alcohols after 5 minutes and primary alcohols does not react at room temperature.
43. A students measures a current as 0.5A. which of the following



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- C) 2-Methyl-1 propanol: D) 2-pentanol
73. When lead, $81\text{Pb}214$, emits a β -particle, the resultant nucleus will be:
A) $83\text{Bi}214$ B) $84\text{Po}214$
C) $82\text{Pb}213$ D) $41\text{Ti}214$
74. A saprophyte that depends on gametophytes is:
A) Adiantum B) Pinus
C) Marchantia D) Mustard-plant
75. Which is not correct about polyvinyl chloride?
A) It is used in large scale production of cable insulator
B) It is a copolymer
C) It is a homopolymer
D) It is used in the manufacturing of pipes
Hints: p v c is a homopolymer made up of vinyl chloride. It is used in the manufacture of cable insulator, pipes and other plastic materials
76. If two cars are moving with velocity 10 m/s and 5m/s in opposite direction to each other, then their relative velocity with respect to one another will be:
A) 5m/s B) 10m/s C) -5m/s D) 15m/s
77. Replication progresses at a rate of about 50 base pairs per second in:
A) Bacteria B) Virus
C) Eukaryote D) All of the above
Hints: the replication of DNA progresses at a rate of about 50 base pair per second in eukaryotes. The replication of DNA occurs very
- rapidly because eukaryotes have a complete set of enzymes for this process.
78. Vinyl acetate monomer is prepared by the reaction of acetaldehyde and acetic-anhydride. The catalyst employed is:
A) FeCl_3 B) Al_2O_3 C) V_2O_5 D) Cr_2O_3
79. When released from a height a ball falls 5m in 1s. in 4s after release it will fall.
A) 40m B) 80m C) 20m D) 100m
80. —I saw him yesterday! she said. Select the correct indirect speech:
A) She told that she had seen him yesterday.
B) She said that she had seen him the day before.
C) She told that she could see him the previous day.
D) She said that she would see him the day before.
81. The pigments of chlorophyll a, b, and carotenoids are present in:
A) Stroma B) Grana
C) Thylakoid membrane D) Crista
82. Thermal processing of industrial waste material aims at:
A) Burning of waste material in pits
B) Converting the solid waste into useful products by thermal treatment.
C) Energy recovery from organic matter prior to its final disposal
D) Size reduction and compaction by thermal process



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the opposite direction.

198. Which of the following tests can be used to distinguish between aldehydes and ketones?

A) Bayer's test B) Fehling's test
C) Silver mirror test D) Both (B) and (C)

Hints: aldehydes and ketones can be distinguished by Fehling's test and silver mirror test Bayer's test is used for the identification of alkenes.

199. One way of expressing the equation of state for an ideal gas is by the equation $pV = NkT$.

What do N and k represent respectively?

- a) Avogadro constant; Boltzmann constant
b) Avogadro constant; Molar gas constant
c) Total number of molecules; Boltzmann constant
d) Total number of molecules; Avogadro constant

Hints: As $PV = nRT$

Also $R = \frac{k}{N}$ $k = \text{Boltzmann's constant}$

$N = \text{Avogadro's number}$

$PV = n \frac{k}{N} T$ or A

$PV = \frac{k}{N} KT$ or A

Now $= \frac{n}{N} = N$ (triple "N" formula)

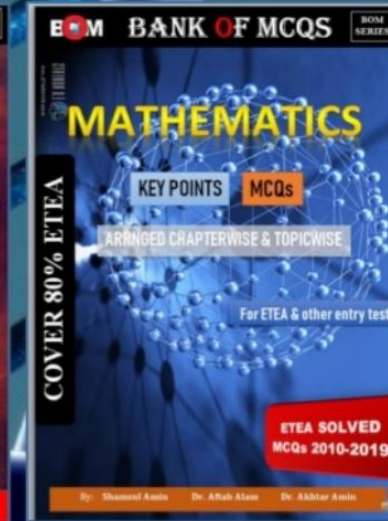
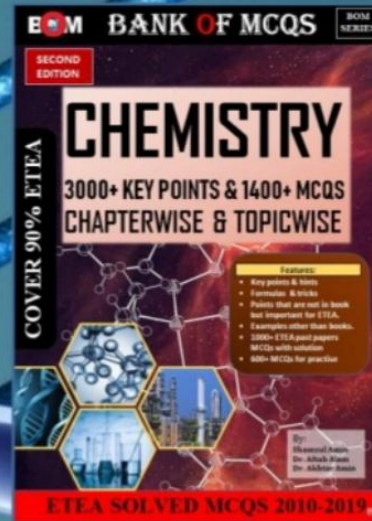
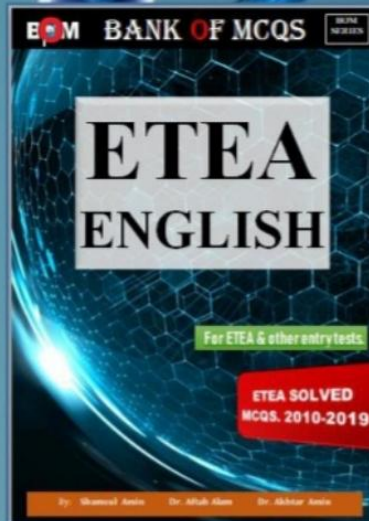
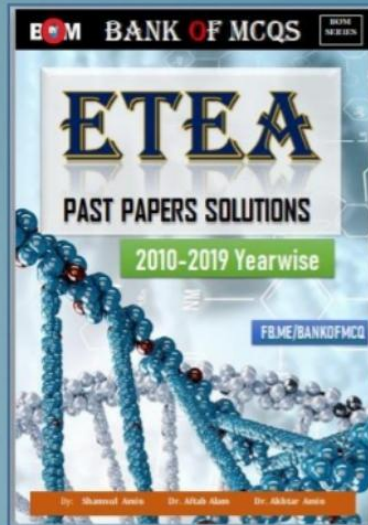
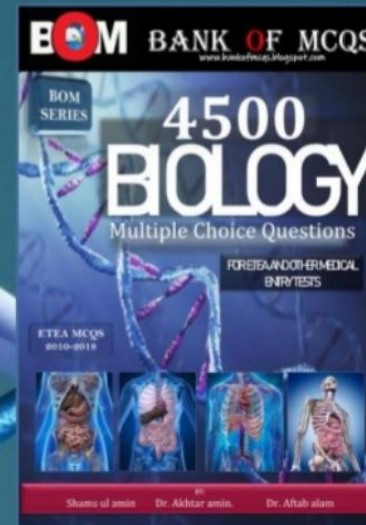
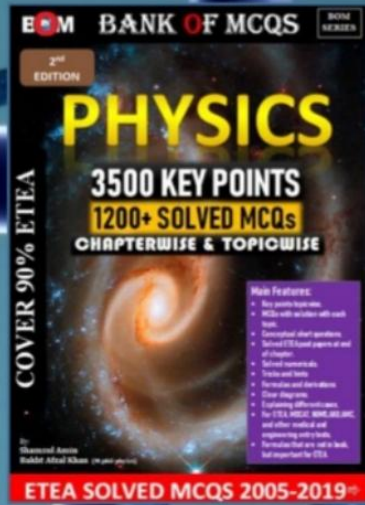
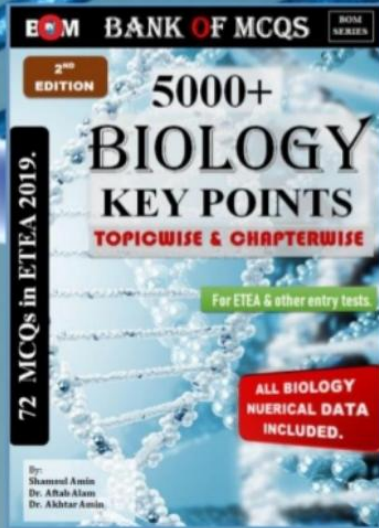
$PV = NkT$ where "N" = total no of molecules

- 200.

—I have been to Spain, he told me.

Select the correct indirect speech:

- A) He told me that he could visit Spain.
B) He told me that he has visited Spain.
C) He told me that he had been to Spain.
D) He told me that he has been to Spain.







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a) $V = \sqrt{g2}$

b) $V = \sqrt{\frac{g}{h}}$

c) $V = \sqrt{pgh}$

d) $V = \sqrt{\frac{g}{p}}$

Hints: correct formula is the one in which dimension of RHS equal to that of LHS.

Answer: (a)

51. The power loss P in resistor is calculated using the formula $P = V^2/R$. The uncertainty in the potential difference V is 3% and the uncertainty in the resistance R is 2% what is the uncertainty in P?
(a) 4% (b) 7% (c) 8% (d) 11%

Hints: Uncertainty in power = 2 x 3%

Answer: (c)

52. $(x^{-1})^{-1} = ?$

a) $\frac{1}{x}$

b) X

c) $-\frac{1}{x}$

d) -x

Hints: $(x^{-1})^{-1} = (x)^{-1} x^{-1} = x^1$

Answer: (b)

53. Aspirin is produced by heating salicylic acid with:

- (a) Phenol in the presence of Sulphuric acid.
(b) Dentoic anhydride in the presence of phosphoric acid
(c) Methyl alcohol in the presence of H_2SO_4
(d) Acetic anhydride in the presence of H_2SO_4

Hints: Acetic anhydride is used in preparing aspirin.

Answer: (d)

54. For a given matrix A , If $|A| \neq 0$, Then $(A^{-1})^t =$
(a) $(A^t)^{-1}$ (b) (A^{-1}) (c) $(A^{-1})^{-1}$
(d) $(A^t)^{-t}$

Hints: $A \neq 0$, then $(A^{-1})^{-1}$ (inverse and transpose are interchangeable)

Answer: (a)

55. The measurement of physical quantity may be subject to random errors and to systematic errors. Which statement is correct?

- (a) Random errors are always caused by the person taking the measurement.
(b) A systematic error cannot be reduced
(c) Random errors can be reduced by taking the average of several measurements
(d) A systematic error results in a different reading each time the measurement is taken

Answer: (c)

56. Molecular orbitals are generally considered as:

- (a) localized (b) de-localized (c) normalized (d) None

Hints: in molecular orbitals the electrons are localized between the nuclei.

Answer: (a)

57. A narrow beam of monochromatic light is incident normally on a diffraction grating. Third order diffracted beams are formed at angles of 45° to the original direction. What is the highest order of diffracted beam produced by this grating?

- (a) 3rd (b) 4th (c) 5th (d) 6th



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$$x^3(y^1 + y^3)] 21$$

(d) $2 [x^1 (y^2 - y^3) + x^1(y^2 - y^1) + x^3(y^1 - y^3)]$

Hints: Area of $\Delta ABC =$

$$\frac{1}{2} \begin{vmatrix} x^1 & y^1 & 1 \\ x^2 & y^2 & 1 \\ x^3 & y^2 & 1 \end{vmatrix}$$

Answer: (c)

73. An alternating current of r.ms. value 20mA passes through a 4 K Ω resistor. What is the average power dissipated?
(a) 0.8 W (b) 1.6 W (c) 8×10^8 W (d) 1.6×10^8 W

Hints: $\langle P \rangle = I^2_{rms} R = (20 \times 10^{-3})^2 \times 4 \times 10^3 = 1.6 \text{ W}$

Answer: (b)

74. The solution formation of two miscible liquids perfectly obey the Raoult's law if they satisfy the conditions:

(a) $\Delta H = 0, \Delta V = 1$ (b) $\Delta H = 1, \Delta V = 0$

(c) $\Delta H = 1, \Delta V = 1$ (d) $\Delta H = 0, \Delta V = 0$

Hints: ideal solutions obey Raoult's law in which no heat is evolved or absorbed, $\Delta H = 0$, no change increase or decrease in volume will take place $\Delta V = 0$

Answer: (d)

75. The eccentricity and foci of the ellipse $16x^2 + 25y^2 = 400$ are:

a) $-\frac{3}{5}, (0, \pm 3)$

b) $-\frac{4}{5}, (0, \pm 4)$

c) $8x, (+3, 0)$

d) $\frac{4}{5}, (\pm 4, 0)$

Hints: $16x^2 + 25y^2 = 400 \rightarrow \frac{x^2}{25} + \frac{y^2}{16} = 1 \rightarrow a^2 = 25, b^2 = 16, (ae)^2 = a^2 - b^2 = 9$

$$-16 = 9 \rightarrow e^2 = \frac{9}{25}, e = \frac{3}{5}$$

Answer: (c)

76. Which of the following statements is false about acetic acid?

(a) Acetic acid is a stronger acid than monochloroacetic acid.

(b) Acetic acid is a weaker acid than trichloroacetic acid.

(c) Acetic acid is a weaker acid than formic acid.

(d) Acetic acid is a weaker acid than hydrochloric acid.

Hints: monochloroacetic acid is a stronger acid than acetic acid due to the presence of an e^- attracting group i.e. Chlorine.

Answer: (a)

77. The $x + iy$ form of $(1 - 3i)^{-1}$ is:

a) $\frac{1}{10} + \frac{3i}{10}$

b) $-\frac{1}{10} - \frac{3i}{10}$

c) $\frac{1}{5} - \frac{3i}{5}$

d) $\frac{1}{10} + \frac{3i}{10}$

Hints: $x + iy$ form of $(1 - 3i)^{-1}$ is

$$\frac{1}{(1 - 3i)} = \frac{1}{(1 - 3i)} \times \frac{(1 + 3i)}{(1 + 3i)} = \frac{(1 + 3i)}{(1)^2 - (3i)^2} =$$

$$\frac{1 + 3i}{1 + 9} = \frac{1}{10} + \frac{3i}{10}$$

Answer: (a)

78. What is the ratio 1 Gm/1 μm ?

(a) 10^{-3} (b) 10^{-7} (c) 10^{-18} (d) 10^{15}

Hints: $1 \text{ Gm} / 1 \mu\text{m} = 10^9 \text{ m} / 10^{-6} \text{ m} = 10^{15}$

Answer: (d)

79. Which metal's presence in fish was responsible for the Minamata disease in Japan?

(a) Lead (b) Copper (c) Mercury (d) Cadmium

Hints: Mercury is poisonous.



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- Answer: (c)
80. $\{1, w, w^2\}$ is a group under:
(a) Division (\div) (b) Multiplication (\times)
(c) Subtraction ($-$) (d) Addition ($+$)
Answer: (b)
81. Which physical quantity would result from a calculation in which a potential difference is multiplied by an electric charge?
(a) electric current (b) electric field strength
(c) electric power (d) electric energy
Hints: Electric P.E = PD x charge
Answer: (d)
82. Meta formaldehyde is a trimer of:
(a) ethanol (b) ethanal (c) Methanol (d) methanol
Hints:
 $3\text{H} - \text{C} - \text{H}$ (methanol) \rightarrow meta formaldehyde
Answer: (c)
83. Order of a matrix A is $p \times q$, order of matrix B = $q \times r$, Then the order of matrix C = $A \times B$ will be____
(a) $p \times r$ (b) $p \times q$ (c) $q \times r$ (d) $r \times p$
Answer: (a)
84. In the expressions below $_a$ is acceleration $_F$ is force $_m$ is mass, $_t$ is time and $_v$ is velocity. Which expression represents energy?
(a) Ft (b) $F v t$ (c) $2mv$ (d) $at^2 / 2$
Hints: $E = \text{power} \times \text{time} = F v t$
Answer: (c)
85. Choose the correct sentence out of the following:
(a) every one of the two students got a prize.
(b) any one of the two students got a prize.
(c) each of the two students got a prize.
(d) each one of the two students got a prize.
Hints: the correct "Distributive" pronoun is required. For two persons "Each" is the appropriate word.
Answer: (c)
86. The order of chemical reaction can be measure by:
(a) Half- life method (b) differential method
(c) Ostwald method (d) all of these
Answer: (d)
87. If A and B are mutually exclusive events then:
65
(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
(b) $P(A \cap B) = P(A) + P(B)$
(c) $P(A \cup B) = P(A) \cup P(B)$
(d) $P(A \cap B) = P(A) \cap P(B)$
Hints: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
As $(A \cap B = \emptyset)$
Answer: (b)
88. Which of the following series lie in the visible region?
(a) Balmer (b) Lyman (c) Paschen (d) Pfund
Hints: Lyman series lie in UV region of electromagnetic spectrum. Balmer series in visible region while Paschen, Brackett and Pfund in IR region
Answer: (a)
89. If half- life of a certain chemical reaction is denoted by the relationship given below: Where $T_{0.5} = \frac{1}{k a - 1}$ is initial concentration



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Answer: (d)

106. A wire loop is placed in a magnetic field. The magnetic flux passing through the loop is minimum when the angle between the field lines and the normal to the surface area of the wire loop is:

(a) 0° (b) 45° (c) 90° (d) 270°

Hints: $\Phi = BA \cos \phi$, ϕ is angle b/w direction of \vec{B} and not normal to the loop.

Answer: (c)

107. Be poles apart' means:

(a) either of the two poles
(b) have nothing in common
(c) leading position in a race
(d) affect somebody greatly

Hints: being entirely opposite or different from each other.

Answer: (b)

108. Choose the correct geometry of the coordination compound $[\text{Ni}(\text{CN})_4]^{2-}$

(a) square planer (b) tetrahedral
(c) trigonal bipyramidal (d) octahedral

Hints: in $[\text{Ni}(\text{Cn})_4]^{2-}$ hybridization is dsp^2 , so the geometry is square planar.

Answer: (a)

109. Period of $\frac{1}{2} \tan 3x$ is:

a) $\frac{\pi}{6}$
b) $\frac{\pi}{3}$
c) $\frac{\pi}{4}$
d) $\frac{\pi}{7}$

Hints: $\frac{\text{period of } \tan \theta}{\text{coefficient of } x} = \frac{\pi}{3}$

Answer: (a)

110. The number of electrons in one

coulomb of charge is:

(a) 6.25×10^{18} (b) 6.25×10^{13} (c) 1.6×10^{18} (d) 9.1×10^{31}

Hints: $1 e = 1.6 \times 10^{-19} \text{ C}$; $1 \text{ C} =$

$$\frac{1}{1.6022 \times 10^{-19}} = 6.25 \times 10^{18} e$$

Answer: (a)

111. Select an element which exists in liquid state at room temperature.

(a) d_1 (b) F_2 (c) Br_2 (d) I_2

Hints: Cl_2 & F_2 are gases, Br_2 is liquid and I_2 is solid.

Answer: (c)

112. Which of the following is a conditional equation?

(a) $(x + 2)^3 = x^3 + 6x^2 + 12x + 8$
(b) $(x - 5)^2 = x^2 - 10x + 25$
(c) $\sin^2 \square + \cos^2 \square = 1$
(d) $x - 1 = 5$

Hints: condition is $x = 6$

Answer: (d)

113. Which of the following is the most elastic one?

(a) rubber (b) wood
(c) sponge (d) steel

Hints: Elasticity = $\frac{\text{stress}}{\text{strain}}$, which is least for steel for the give stress.

Answer: (d)

114. If K_c of a certain reaction is large it indicates that at equilibrium:

(a) The reactants concentration will be high
(b) the products concentration will be low
(c) the products concentration will be high
(d) the reactants and products concentration will be equal

Hints: $K_c = \frac{\text{product}}{\text{reactant}}$ greater K_c means greater product.

Answer: (c)



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115. Conic is a parabola if:

- (a) $e = 1$ (b) $e = 1\frac{1}{2}$ (c) $c = \frac{3}{2}$ (d) $c = \frac{2}{3}$

Answer: (a)

116. If component of a vector is 3N and y component is 3N then the angle made by the resultant vector with the x-axis is:

- (a) 450 (b) 3150 (c) 1350 (d) 2250

Hints: Direction of vector $\phi = \tan^{-1}$

$$\frac{fy}{fx} = \tan^{-1} (1) = 45^\circ$$

Answer: (a)

117. A cylindrical wire 4.0m long has a resistance of 31Ω and is made of metal of resistivity $1.0 \times 10^{-4} \Omega \cdot m$. What is the radius of cross section of the wire ?

- (a) $1.0 \times 10^{-4} m$ (b) $2.0 \times 10^{-2} m$
(c) $6.4 \times 10^{-8} m$ (d) $2.0 \times 10^{-4} m$

$$\text{Hints: } R = \frac{\rho l}{\pi r^2} \rightarrow r = \sqrt{\frac{\rho l}{\pi R}} = \sqrt{\frac{1 \times 10^{-4} \times 4}{3.14 \times 31}} = 2.0 \times 10^{-4} m$$

Answer: (d)

118. Dilute H_2SO_4 and not HNO_3 is used to prepare H_2S from FeS because

- (a) HNO_3 acts as an oxidizing agent and oxidizes H_2S to SO_2
(b) HNO_3 acid is weaker acid than H_2SO_4
(c) H_2SO_4 is more reactive than HNO_3
(d) H_2SO_4 is environmental friendly as compared to HNO_3

Hints: H_2SO_4 is an oxidizing agent & fuming acid.

Answer: (a)

119. Period of \sin is

- a) $\frac{\pi}{2}$

b) 2π

c) π

d) $\frac{3\pi}{2}$

Answer: (b)

120. A total charge of 100 C flows through a 2W light bulb in a time of 50s. What is the potential difference across the bulb during the time?

- (a) 0.12 V (b) 2.0 V (c) 6.0 V (d) 24V

$$\text{Hints: } p = IV = \frac{qV}{T} \rightarrow V = \frac{pT}{q} = 24V$$

50/50 = 2 volt

Answer: (b)

121. $Ca_3(PO_4)_2$. CaF_2 is the formula of:

- (a) chlorapatite (b) fluorapatite
(c) phosphorite (d) None of these

Hints: $Ca_3(PO_4)_3F_2$ is called Fluorapatite.

Answer: (b)

122. Let a and b be any two vectors and θ be the angle between them then $|b| \cos \theta$ is projection of:

- (a) b in the direction of a (b) a in the direction of b
(c) b in the direction of x-axis (d) a in the direction of yaxis

Hints: projection of \vec{a} in the

$$\text{direction of } \vec{b} = \frac{\vec{a} \cdot \vec{b}}{|\vec{b}|}$$

$$A = b \cos \theta$$

Answer: (a)

123. What is the ultimate tensile stress of a material?

- (a) the stress at which the material becomes ductile
(b) the stress at which the material deforms plastically
(c) the stress at which the material



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d) $a \left(\frac{b}{a}\right)^{\frac{n}{n+1}}$

Answer: (d)

160. Choose the correct order of decreasing basic strength.
(a) $\text{MgO} > \text{Na}_2\text{O} > \text{P}_4\text{O}_{10} > \text{Al}_2\text{O}_3$
(b) $\text{Na}_2\text{O} > \text{MgO} > \text{Al}_2\text{O}_3 > \text{P}_4\text{O}_{10}$
(c) $\text{P}_4\text{O}_{10} > \text{Na}_2\text{O} > \text{MgO} > \text{Al}_2\text{O}_3$
(d) $\text{Al}_2\text{O}_3 > \text{MgO} > \text{P}_4\text{O}_{10} > \text{Na}_2\text{O}$
Hints: if we move across the period the basicity of oxides are decreased. So $\text{Na} \rightarrow 1^{\text{st}}$ group members, $\text{Mg} \rightarrow 2^{\text{nd}}$ group members, $\text{Al} \rightarrow 3^{\text{rd}}$ group members, $\text{P} \rightarrow 5^{\text{th}}$ group members
Answer: (b)

161. Select the statement which is NOT true about carbonyl group?
(a) The three atoms attached to the carbonyl carbon are not in the same plane.
(b) The carbon in carbonyl group is sp^2 hybridized.
(c) The bond angles around carbon attached to three atoms are approximately 120° .
(d) The carbonyl group forms resonating structure
Hints: all three atoms attached to carbon lie in same plane. Bond angles are 120° , thus it is planar.
Answer: (a)

162. Which statement is NOT true about benzene?
(a) Benzene is a planar molecule with bond angles 120°
(b) It is completely miscible with water
(c) It can be converted into a cyclohexane by hydrogenation
(d) It can be converted into ethyl benzene when reacted with ethyl chloride and AlCl_3

Hints:

163. What is plastic deformation/
a) Plastic deformation occurs if, when the load is removed, the material contracts but a permanent stretching has occurred.
b) Plastic deformation occurs until the extension is no longer proportional to the length
c) Plastic deformation occurs when strain is directly proportional to stress but when the load is removed the material returns to its normal length
d) the material extends so that strain is directly proportional to stress.

Hints: By definition

Answer: (a)

164. $Ax + \frac{b^2}{x} = c^2$ is:
(a) an equation of power 5 (b) a linear equation
(c) a cubic equation (d) a quadratic equation
Answer: (a)

165. What is the relationship between the intensity and the amplitude of a wave?
(a) $\frac{1}{a} = \text{constant}$ (b) $I \propto a^2 = \text{constant}$
(c) $\frac{1}{a^2} = \text{constant}$ (d) $I \propto a = \text{constant}$
Hints: $I \propto a^2 \rightarrow \frac{1}{a^2} = \text{constant}$
Answer: (c)

166. Select the suitable product when ethylene oxide react with hydrogen bromide:
(a) 1-Bromethanol (b) Ethyl bromide



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parallel the resistance of their equivalent resistor will:

- (a) increases (b) decreases (c) not change (d) None

Hints: in parallel combination of resistors, equivalent is smaller than the smallest in combination.

Answer: (b)

185. What the required conditions for the following reaction? $\text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{CH}_2\text{Cl}_2 + \text{CHCl}_3 + \text{CCl}_4 + \text{HCl}$

(a) Low temperature (b) Al_2O_3 catalyst 400°C

(c) ZnCl_2 250°C (d) UV light

Hints: Halogenation of alkene is favored by UV light.

Answer: (d)

186. $\frac{\cos 75^\circ + \cos 15^\circ}{\sin 75^\circ - \cos 15^\circ} = ?$

a) $\sqrt{3}$

b) $\sqrt{\frac{3}{2}}$

c) $\frac{1}{2}$

d) $\frac{1}{\sqrt{2}}$

Hints: $\frac{2\cos\left(\frac{75-15}{2}\right) + \cos\left(\frac{75-15}{2}\right)}{2\cos\left(\frac{75+15}{2}\right)\sin\left(\frac{75-15}{2}\right)} = \cot$

$30^\circ = \sqrt{3}$

Answer: (a)

187. A wave incident in a rare medium, when reflected from a denser medium will have a phase change of:

(a) 90° (b) 0° (c) 180° (d) 360°

Hints: Its crest reflect as trough and trough reflects as crest hence it undergoes a phase change of 180°

Answer: (c)

188. The conversion of ethyne to acetaldehyde is carried out:

(a) Ni 250°C (b) HgSO_4 Fe_2O_3 80°C

(c) Al_2O_3 Fe_2O_3 150°C (d) Pd , 70°C

Hints: $\text{HC} \equiv \text{CH} + \text{H}_2\text{O}$

$\xrightarrow{\text{HgSO}_4 + \text{H}_2\text{SO}_4}$

acetaldehyde Answer:

(b)

189. The apparent weight of a man in an elevator moving up with acceleration 'a' is:

(a) mg (b) $mg - ma$ (c) $mg + ma$ (d) ma

Hints: Apparent weight = $w' = w + ma = mg + ma$

Answer: (c)

190. The line $y = mx + c$ is tangent to the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, If

a) $C = \pm\sqrt{a^2m^2 + b^2}$

b) $C = \pm\sqrt{a^2m^2 - b^2}$

c) $C = \pm\sqrt{1 + m^2}$

d) $C = \pm\sqrt{a^2 + b^2m^2}$

Answer: (b)

191. Your friend proved more sympathetic than expected he do.

(a) will (b) Shall (c) should (d) would

Hints: here the target is the suitable modal auxiliary.

Answer: (d)

192. The sum of binomial coefficients in $(1 + x)^n$ is:

(a) $2n+1$ (b) $2n$ (c) 2^{-n} (d) 2^{n-1}

Hints: $(1+2)^n = (1+1)^n + \text{put } x=1 \rightarrow 2^n$

Answer: (b)

193. A projectile is launched at 45° to the horizontal with initial kinetic energy E . Assuming air resistance to be negligible what will be the kinetic energy of the projectile



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C) Sound D) Voltage
Hints: it guides light through itself by the phenomena of total internal reflection or continuous refraction.
Answer: (b)

9. Methanoic acid HCOOH has one carbon-oxygen bond of length 123 PM and another of 136 PM. The C = O and C — O bond lengths respectively would be:
A) 136 PM, 123 PM
B) 123 PM and 136 PM
C) 136 PM, 136 PM
D) 123 PM and 123PM
Hints: double bond is shorter/stronger than single bond.
Answer: (b)

10. Abscissic acid (ABA) promotes:
A) Triple response
B) Sex expression
C) Flower initiation
D) Leaf, flower and fruit fall
Hints: abscisic acid causes abscission i.e. separation of stalks of fruit, leaves and flower from the stem or branch.
Answer: (b)

11. Choose the compound in which hydrogen bonding is not possible?
A) CH₃OCH₃ B) H₂O
C) CH₃CH₂OH D) CH₃COOH
Hints: There are no hydrogen bonding in ether because in ether hydrogen is not directly attached with oxygen.
Answer: (a)

12. The ratio of output voltage V₀ to the voltage difference V_{in} between the positive (+) input and negative (-) input of opamp is (where V_{in}=V₊ - V₋):

A) Current gain B) Voltage gain
C) Open-loop gain D) Close-4oop gain
Hints: $V_o \propto (V_+ - V_-)$, $V_o = A_{o1} V_+ - V_-$

$A_{o1} = \frac{V_o}{(V_+ - V_-)}$ A_{o1} = open loop gain
Answer: (c)

13. Why have you broken this jug?
Passive form of the sentence is:
A) Why has this jug been broken by you?
B) Why have this jug been broken by you?
C) Why this jug has been broken by you?
D) Why had that jug been broken by you?
Hints: passive of an interrogative sentence is intended. Tense is present perfect, structure is interrogative.
Answer: (a)

14. Surplus amino acid in the body are broken down to form urea in:
A) Spleen B) Kidneys
C) Liver D) Pancreas
Answer: (c)

15. Lipids are chemically:
A) Acids B) Alcohols
C) Ethers D) Esters
Hints: Lipids are the esters of glycerol and fatty acids. The glycerol of component is constant. Fatty acid component is variable.
Answer: (d)

16. The resistance of light dependant resistance LDR:
A) Increases with light
B) Decreases with light
C) Decreases with darkness



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C) 6.022×10^{-24} amu D) 6.022×10^{24} amu

Hints: 1 amu is equal to 1.661×10^{-24} g, $1g = x$

$\rightarrow 1.661 \times 10^{-24} \times x = 1 \rightarrow x =$

$$\frac{1}{1.661 \times 10^{-24}} = 6.022 \times 10^{23} \text{ a mu}$$

Answer: (a)

53. If a soap bubble is charged:
A) Its size decreases B) Its size increases
C) No change D) None of them
Hints: Due to repulsion among similar charges, size of soap bubble increases
Answer: (b)

54. How many genotype will be produced by crossing of two alleles —A| and —a|?
A) One B) Two C) Three D) Four
Hints: when alleles "A" and "a" are crossed the genotype possible will be AA& aa.
Answer: (c)

55. An electric current of 1 A is passing through a cross section of the coil in 1 second. How many electrons are involved in providing a current of 1A? The charge on 1 electron is 1.602×10^{-19} C.
A) 3.21×10^{18} B) 2.2×10^{16}
C) 1.602×10^{19} D) 6.42×10^{18}
Hints: $1e = 1.6 \times 10^{-19}$ C $1 C =$
 $\frac{1}{1.6 \times 10^{-19}} = 6.42 \times 10^{18} e$ $1 C = 1 A \text{ sec}$
 $= 6.42 \times 10^{18} e$
Answer: (d)

56. A botanist who proposed the cell-theory was:
A) Schleiden B) Schwann
C) Robert Hook D) Robert Brown
Hints: Schwann: zoologist. Brown:

discovered nucleus. Hook discovered cell.

Answer: (a)

57. For a certain chemical reaction the slope of the plot $\frac{dx}{dt}$ was determined and plotted against the concentration $(a - x)^2$ and a straight line was obtained. It indicates that the reaction is of:
A) First order B) Second order
C) Third order D) Zero order
Hints: Straight graph shows that reaction is 2^{nd} order
Answer: (b)

58. One mole is the amount of substance which contains as many elementary entities as contained in:
A) 0.12 kg of ^{12}C B) 1.2 kg of ^{12}C atom
C) 0.012 kg of ^{12}C atom D) 0.12 kg of ^{16}O
Hints: $0.012 \text{kg} = 0.012 \times 1000 = 12 \text{g}$
 $1 \text{ mole } ^{12}\text{C} = 0.012 \text{kg} = 6.023 \times 10^{23}$ atoms
Answer: (c)

59. Smooth endoplasmic reticulum makes:
A) Enzymes B) Protein
C) Sugar D) Lipids
Hints: SER is concerned with lipids. RER with proteins.
Answer: (d)

60. Select the chemical method used for the determination of reaction rate:
A) Conductometry B) Polarimetry
C) pH metry D) Volumetric analysis
Hints: Volumetric analysis i.e titration is chemical method
Answer: (d)



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S. No	MCQs
1.	<p>The sum of mole fractions of solute and solvent is always equal to: A) 0.1 B) 10.0 C) 1.0 D) Zero Hints: Sum of all mole fractions is one. Answer: (c)</p>
2.	<p>Two forces of magnitude 20 N and 10 N act at a point then which one of the following cannot be their possible sum? A) 30 N B) 10 N C) 35 N D) 15 N Hints: the range of their possible sum is from 10 to 30 but 35 N cannot be their possible sum. Answer: (d)</p>
3.	<p>Glycolysis completes with the net gain of: A) 2 ATP B) 3 ATP C) 4 ATP D) 32 ATP Hints: As two ATPs are already consumed during $C_6H_{12}O_6$ splitting. Answer: (a)</p>
4.	<p>An Azeotropic mixture of two miscible liquids boils at lower temperature than its components when: A) The system shows negative deviation from Raoult's law. B) The system shows positive deviation from Raoult's law C) The system perfectly obeys Raoult's law D) Both A) and B) Hints: As the BP of the mixture is lower than the components of the</p>
	<p>mixture. The vapour pressure is higher. This is called +ive deviation from Raoult's law Answer: (b)</p>
5.	<p>When a force is applied to a body, several effects are possible. Which one of the following effects could not occur? A) The body speeds up B) The body rotates C) The body changes direction D) Mass of body decreases Hints: force can change the speed of the body or direction of motion But it can never change the mass of the body. Answer: (d)</p>
6.	<p>When you go to Karachi, please A) Collect a good watch for me. B) Acquire a good watch for me. C) Bring a good watch for me. D) Arrange a good watch for me. Hints: involves sentence completion. Answer: (c)</p>
7.	<p>Restriction enzymes are of great use in genetic engineering because: A) They cut DNA at a specific base level B) They cut D.N.A at several specific levels C) They help in binding the pieces of D.N.A D) They are nuclease Answer: (a)</p>
8.	<p>Optical fibers guides: A) Current B) Light</p>



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Hints: $S = Vi t + \frac{1}{2}gt^2$, $h = 0 + \frac{1}{2}gt^2$

$\rightarrow t^2 = 2h/g \rightarrow t = 4s$

Answer: (b)

99. How many sigma bonds are there in $CH_2 = CH-CH = CH_2$:

A) 6 B) 9

C) 11 D) 4

Hints:

Answer: (b)

100. In electromagnetic waves the electric and magnetic vectors are:

A) Parallel B) Anti parallel

C) Perpendicular D) None of the above

Hints: E and B are perpendicular to each other.

Answer: (c)

101. The negative gradient of electric potential is also called:

A) Potential energy B) Electric field intensity

C) Electric potential difference

D) Electro volt

Hints: $E = -\frac{\Delta V}{\Delta r}$

Answer: (b)

102. In human being, the number of cranial nerves are:

A) 8 pairs B) 10 pairs

C) 12 pairs D) 31 pairs

Hints: 12 pairs of cranial nerves arise from brain. The number of spinal nerve is 31 pairs.

Answer: (c)

103. Ethene and Ethyne can be distinguished by employing the test:

A) Br_2 in organic solvent

B) Baeyer's reagent

C) Phenyl Hydrazine D) Tollens reagent

reagent

Hints: Ethene + Tollens reagent \rightarrow

No ppt Ethyne + Tollens reagent

\rightarrow ppt

Answer: (d)

104. The ionization potential of Hydrogen atom is:

A) 13.6 V B) 1.36 V

C) 10.2 V D) 4.3 V

Hints: Ionization energy of H atom = 13.6V So its ionization potential = 13.6V

Answer: (a)

105. Live attenuated vaccines are used to treat all of the following diseases except:

A) Typhoid and plague B) Polio and measles

C) Cholera and rabies D) Mumps and influenza

Answer: (b)

106. Cracking problem of fuel combustion can be avoided by:

A) reforming B) improving octane number

C) adding TEL D) All of the above

Hints: All these are used to improve the quality of petrol.

Answer: (d)

107. The shortest wavelength of radiation in Paschen series is:

A) $R_H/9$ B) $9/R_H$

C) $9 R_H$ D) $9 + R_H$

Hints: Wavelength of spectral line in paschen series of the H- spectrum is $\frac{1}{\lambda} = R_H \left(\frac{1}{9} - \frac{1}{n^2} \right)$ where $n = 4, 5, 6$

..... For shortest wavelength $n = \infty$

then $\frac{1}{\lambda} = R_H \left(\frac{1}{9} - 0 \right) \lambda = \frac{9}{R_H}$

Answer: (b)

108. All of the following are polysaccharides except:

A) Lactose B) Cellulose



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Answer: (a)

117. In human being, the carrier of color blind is:

- A) Male B) Female
C) Both male and female D) None of them

Hints: If female contain one recessive allele for color blindness on one of her X chromosome, she will a carrier of the disease. Male may contain recessive or dominant allele.

Answer: (b)

118. The correct electronic configuration of Nickel (28) is:

- A) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^8 4s^2$
B) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^7 4s^2 4p^1$
C) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^2 4p^2$
D) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^1 4p^3$

Hints: $_{28}\text{Ni} = 1s^2 2s^2 2p^6 3s^2 3p^6 3d^8$

Answer: (a)

119. Hook's law correlates the:

- A) Force and displacement B) Force and extension
C) Force and compression D) Stress and strain

Hints: Hook's law: within the elastic limit stress \propto strain

Answer: (d)

120. Ghani Khan is _____ of Pashto.

- A) John Keats B) a John Keats
C) the John Keats D) like John Keats

Hints: Involves similarity of two poets. The definite article "the" should be used before the proper Noun.

Answer: (c)

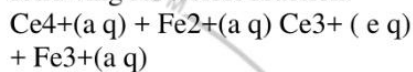
121. The number of ATP formed directly by a single krebs cycle is:

- A) One ATP B) Two ATP
C) 32 ATP D) 36 ATP

Hints: This ATP is formed by substrate level phusphorylation.

Answer: (a)

122. Select the correct equilibrium constant expression, Kc for the following reversible reaction.



- A) $\frac{[\text{Ce}^{3+}(\text{aq})]^2 [\text{Fe}^{3+}(\text{aq})]}{[\text{Ce}^{4+}(\text{aq})][\text{Fe}^{2+}(\text{aq})]}$
B) $\frac{[\text{Ce}^{3+}(\text{aq})][\text{Fe}^{3+}(\text{aq})]}{[\text{Ce}^{4+}(\text{aq})][\text{Fe}^{2+}(\text{aq})]}$
C) $\frac{[\text{Ce}^{4+}(\text{aq})][\text{Fe}^{2+}(\text{aq})]}{[\text{Ce}^{3+}(\text{aq})][\text{Fe}^{3+}(\text{aq})]^3}$
D) $\frac{[\text{Ce}^{3+}(\text{aq})][\text{Fe}^{3+}(\text{aq})]^4}{[\text{Ce}^{4+}(\text{aq})][\text{Fe}^{2+}(\text{aq})]}$

Answer: (b)

123. MRI works on the principle of:

- A) Beats B) Interference
C) Resonance D) Standing waves
- Hints: MRI stands for magnetic Resonance Imaging

Answer: (c)

124. Myoglobin combines with:

- A) Four oxygen molecules
B) Three oxygen molecules
C) Two oxygen molecules
D) One oxygen molecule

Hints: myoglobin is made of one polypeptide chain and contain only one haeme group.

Answer: (d)

125. Sunken stomata are present in:

- A) Hydrophytes B) Xerophytes
C) Mesophytes D) All of the above
- Hints: Just to reduce the rate to transpiration.

Answer: (b)

126. Bohr predicted the radius of the orbit of the electron in hydrogen



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- Answer: (d)
186. Bicep muscle is attached to the humerus by:
A) Tendon B) Ligaments
C) Elastic fibers D) Areolar
Hints: tendon connects muscle to bone.
Answer: (a)
187. Which is NOT true about amino acids?
A) They have two functional groups
B) They show both acidic and basic characteristics
C) They are the basic units of proteins
D) They do not exist in solid state
Hints: the amino acids do exist in solid state. For functionally fibrous proteins are solid in nature.
Answer: (d)
188. The work function of a metal is 6.63 eV. The threshold frequency of the metal is:
A) 1.6×10^{15} Hz B) 1.6×10^{12} Hz
C) 6.63×10^{-34} Hz D) 1.6×10^{-19} Hz
Hints: $f_o = \frac{w}{h} = \frac{6.63\text{eV}}{6.6 \times 10^{-34}} = 1.6 \times 10^{19+34} = 1.6 \times 10^{15}\text{Hz}$
Answer: (a)
189. Concentration of water molecules is inversely proportional to the:
A) Water potential B) Pressure potential
C) Solute potential D) Osmotic potential
Answer: (c)
190. Which is the least polar molecule?
A) HF B) HI C) HCl D) HBr
Hints: Electronegativity difference of H and I is the least.
- Answer: (b)
191. The birds sitting on an overhead transmission line suffer no harmful effects because:
A) Their bodies have high resistance
B) Their feet are good insulators
C) There is negligible potential difference between their feet
D) Wires are insulated
Answer: (c)
192. They arrived at about mid night
A) because their flight was detained.
B) because their flight was delayed.
C) because their flight was derailed.
D) because their flight was diverted
Hints: The compound sentence in which both the clauses are in past simple tense.
Answer: (b)
193. The target organ for vasopressin is:
A) Heart B) Liver
C) Stomach D) Kidneys
Hints: Vasopressin stimulates absorption of water through nephron of the kidney.
Answer: (d)
194. Ketones are prepared by the oxidation with $\text{Na}_2\text{Cr}_2\text{O}_7$ and H_2SO_4 of:
A) Primary alcohol B) Secondary alcohol
C) Tertiary alcohol D) All of the above
Hints:
Answer: (b)
195. The sinusoidal AC current in a circuit is $I = 50 \sin(20t)$. The peak value of current is:
A) 100 A B) 25 A C) 50 A D) 20 A



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Hints: $I = 50 \sin(20t) \rightarrow I = I_0 \sin(\omega t) \rightarrow I_0 = 50A$

Answer: (c)

196. Thirst is controlled by:
A) Pituitary gland B) Adrenal gland
C) Parathyroid D) Thyroid

Hints: thirst is controlled by pituitary gland as it produces vasopressin.

Answer: (a)

197. Which of the following is a condensation polymer?

A) Nylon 6,6 B) Teflon
C) Polypropylene D) Orion

Hints: Nylon 6,6 as H_2O is eliminated during its formation

Answer: (a)

198. Current in the semiconductors is caused by the movement of:

A) Protons B) Electrons only
C) Holes only D) Both electrons and holes

Hints: Current in semiconductor is due to movement of free electrons and holes in the opposite directions.

Answer: (d)

199. Auxins inhibit the growth of:

A) Apical buds B) Lateral buds

C) Parthenocarpy D) Root growth

Hints: Auxin play a key role in seedless variety production in apical dominance, but usually inhibit the division in lateral meristem.

Answer: (d)

200. Which of the following statement is NOT true?

A) Natural rubber is hydrocarbon
B) Natural rubber is isoprene
C) Natural rubber is polymer of 1, 3 Butadiene
D) Natural rubber can be vulcanized

Hints: It contains other elements besides C and H.

Answer: (a)

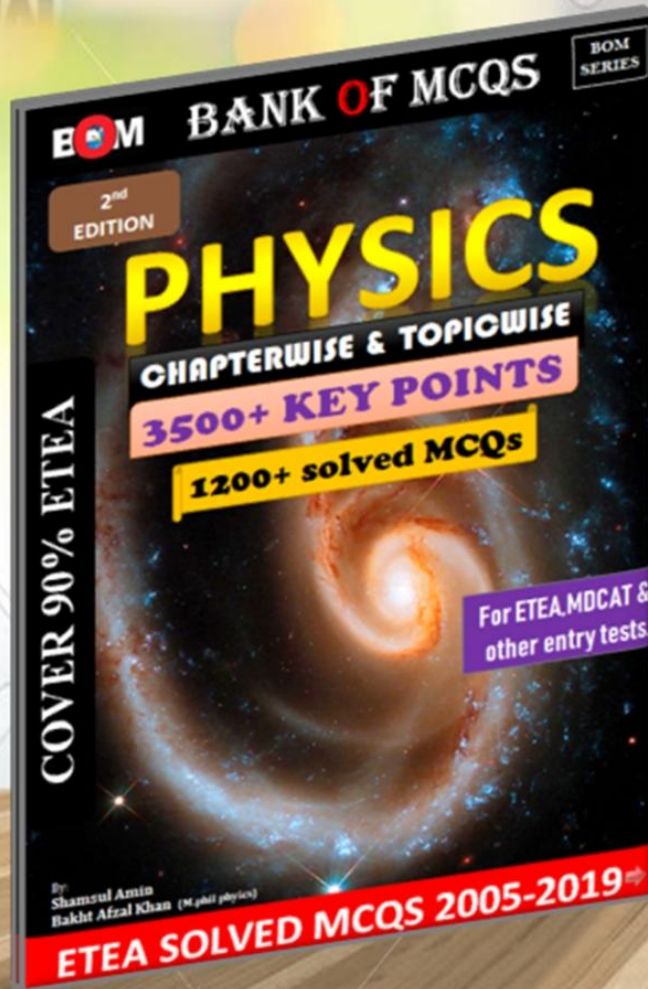
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Bakht Afzal Khan (M.Phil. Physics)

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- Hints: the domain of $\cos^{-1}x$ is $-1 \leq x \leq 1$ because it is the range of $\cos x$
Answer: (b)
128. Acetic acid undergoes reduction with Li Al H₄ to give:
(a) Ethanal (b) ethane (c) ethyne (d) ethanol
Answer: (d)
129. Which of the following particles is not deflected when projected normal to magnetic field
(a) proton (b) α - Particles (c) Photon (d) β - Particles
Hints: because photon is neutral.
Answer: (c)
130. "CEMETERY" most nearly means:
(a) graveyard (b) factory (c) system (d) pattern
Answer: (a)
131. The domain of principal sine function is:
a) $[0, \frac{\pi}{2}]$ b) $[-\frac{\pi}{2}, \frac{\pi}{2}]$ c) $[0, \frac{3\pi}{2}]$ d) $[0, 2\pi]$
Hints: principal function is a function whose in
132. Which of the following is ortho-para orienting and ring deactivation?
(a) - Cl (b) - NH₂ (c) - OCH₃ (d) - OH
Hints: Halogens are ortho para & deactivating group.
Answer: (a)
133. The magnitude of induced e. m. f in the loop depends upon
(a) Change of electric flux (b) rate of change electric flux (c) rate of change of magnetic flux (d) change of magnetic flux
Hints: $\epsilon = -\frac{\Delta\phi}{\Delta t}$
Answer: (c)
134. π in term of numbers is:
(a) a symbol (b) an integer (c) a rational number (d) a irrational number
Answer: (d)
135. Azeotropic mixtures boil at constant temperature they:
(a) are non-ideal. solution (b) are ideal solution (c) obey Raoult's law (d) are accompanied by no change in enthalpy
Hints: Zeotropic mixture is ideal while azeotropic mixture is non-ideal
Answer: (a)
136. The energy used to magnetize and demagnetize the core of transformer causes power loss which is due to
(a) winding in coil of transformer (b) Eddy current (c) hysteresis (d) all of these
Answer: (d)
137. $\forall a, b \in \mathbb{R}$, the property either $a = b$ or $a > b$ or $a < b$ is called:
(a) Archimedean (b) Trichotomy (c) Closure (d) Transitive
Answer: (b)
138. Phenol is an ortho-para orienting because the hydroxyl group:
(a) increases the electron density at meta position favouring nucleophilic attack (b) increases the electron density at meta position favouring electrophilic attack (c) increases the electron density at O/P positions favouring nucleophilic attack (d) increases the electron density at O/P positions favouring electrophilic attack
Hints: - OH is \rightarrow donating group and



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- Hints: Strength before breaking.
Answer: (a)
150. Only after my wife asked me the time _____ that I had lost my watch.
(a) did I realized (b) I realized
(c) I did realized (d) I did realize
Hints: Option (b) makes the combination of past indefinite + past perfect tense
Answer: (b)
151. The set $G = \{1, -1, i, -i\}$ is a group under:
(a) + (addition) (b) - (subtraction)
(c) \times (multiplication) (d) \div (division)
Hints: By the four properties of group
Answer: (c)
152. The rate constant (k) for a first order reaction was found to be 0.2 seconds what will be its half life?
(a) 10 seconds (b) 5 seconds
(c) 2.5 seconds (d) 15 seconds
Answer: (b)
153. The substance which breaks just the elastic limit is reached is:
(a) plastic substance (b) ductile substance
(c) ordinary substance (d) brittle substance
Hints: Brittle has no plastic region.
Answer: (d)
154. The compound proposition $(p \wedge q) \wedge \sim (p \vee q)$ is a:
(a) Tautology (b) sequence
(c) quantity (d) self-contradiction
Hints: Use truth table
Answer: (d)
155. Ethanol is manufactured by fermentation of starche. The starch conversion to maltose requires the enzyme
(a) Zymase (b) invertase (c) diastase
(d) all
Hints: $C_6 H_{10} O_5 \xrightarrow{\text{Diastase}} 4C_{12} H_{22} O_{11}$
Answer: (c)
156. The temperature at which the resistance of conductor approaches to zero is called
(a) curie temperature (b) critical temperature
(c) absolute temperature (d) normal temperature
Hints: Critical temperature use for super conductors.
Answer: (b)
157. The multiplicative inverse of a complex number $\{a, b\}$ is:
a) $(\frac{a}{a^2+b^2}, \frac{-b}{a^2+b^2})$ b) $(\frac{a}{a^2-b^2}, \frac{-b}{a^2-b^2})$
c) $(\frac{-b}{a^2+b^2}, \frac{a}{a^2+b^2})$ d) $(\frac{-a}{a^2+b^2}, \frac{-b}{a^2+b^2})$
Hints: $Z^{-1} = \frac{1}{a+bi} \times \frac{a-bi}{a-bi}$ simplify we get option (a)
Answer: (a)
158. KNO_3 exists in two crystalline forms Rhomohedral and Orthorhomic. the phenomenon is known as:
(a) polymorphism (b) isomorphism
(c) allotropy (d) None of these
Answer: (a)
159. The depletion region contains:
(a) electrons (b) holes
(c) electrons and holes
(d) No holes and no electrons
Hints: depletion region contains ions
Answer: (d)



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Answer: (c)

180. "ABORGINAL" most nearly means:

- (a) unoriginal (b) native
(c) cheap (d) second rate

Hints: aboriginal means native/local.
Answer: (b)

181. The sum of an infinite G.P is 4 and the sum of the cubes of its terms is 92. The common ratio of the original G.P is:

- a) $\frac{1}{2}$ b) $\frac{2}{3}$ c) $\frac{1}{3}$ d) $-\frac{1}{2}$

Hints: $S_{\infty} = 4 \rightarrow \frac{a}{1-r} \rightarrow a = 4(1-r)$,

$$a^3 + a^3 r^3 + a^3 r^6 + \dots = 92, \frac{a^3}{1-r^3} = 92 \rightarrow$$

$$a^2 = 23(1+r+r^2) \Rightarrow [4(1-r)]^2$$

Answer: options given are not correct.

182. Moseley demonstrated a direct relationship between the frequency of x-rays emitted by an element bombarded with high energy electrons. On what characteristic of the element does it depend?

- (a) electronic configuration (b) atomic number
(c) degree of ionization (d) atomic mass

Hints: $\sqrt{\nu} = a(z-6)$

Answer: (b)

183. The intensity of x-rays depends upon
(a) filament current (b) nature of material of target

- (c) operating voltage (d) All of these
Hints: filament current increases no. of electrons therefore intensity increases.

Answer: (a)

184. If $x > 0$, $x y = 1$ then minimum value of $x + y$ is:

- (a) 2 (b) -2 (c) 1 (d) -1

Hints: $x > 0$ & $x y = 1 \Rightarrow x + y = x + \frac{1}{x}$

apply double derivative test

Answer: (a)

185. Under which condition the change in enthalpy of a system is equal to the heat flow between the system and its surroundings (q)?

- (a) constant volume (b) at constant pressure
(c) constant temperature (d) None of these

Hints: $\Delta H = q_p + p\Delta V$ if $\Delta V = 0$ then $\Delta H = q_p$

Answer: (a)

186. The excited state which persists for unusually longer period of time is called:

- (a) ground state (b) Ionized state
(c) metastable state (d) ordinary excited state

Hints: Meta stable is longer than normal excited state.

Answer: (c)

187. If a 4-digit number is formed by using the digit 1, 2, 3, and 5 with no repetition then the probability that the number is divided by 5 in:

- a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{3}{4}$ d) $\frac{1}{4}$

Hints: A = event = 3! Sample space = 4! $P(a) = \frac{3!}{4!} = 1/4$

Answer: (d)

188. Benzene and toluene form nearly ideal solution. The V.P of pure toluene is 22 torr at 20°C for equimolar mixture of benzene and toluene at 20°C the V.P of toluene is:

- (a) 5.5 torr (b) 11.0 torr (c) 22 torr
(d) 1.1 torr



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(c) equally susceptible to oxidation
(d) all of these

Hints: Carbon- carbon double bond is more exposed for oxidation.

Answer: (b)

134. The changes in the biochemical composition and physiology occurring at regular intervals in 24 hours is termed as:

(a) Gioannual rhythm (b) lunar rhythm

(c) circadian rhythm (d) tidal rhythm

Answer: (c)

135. $\frac{\text{volt} \times \text{sec}}{\text{Amphere}}$ is equal to:

(a) gauss (b) weber (c) henry (d) tesla

Hints: Henry = $\frac{\text{volt} \times \text{sec}}{\text{Amphere}}$, $M = \frac{es}{\Delta I / \Delta t} =$

$\frac{es \Delta t}{\Delta I} = \frac{\text{volt} \times \text{sec}}{\text{Amphere}}$

Answer: (c)

136. Which of the following is a nucleophile?

(a) AlCl_3 (b) CN^- (c) H_3O^+ (d) BF_3

Hints: CN^- contains one pair of e^- so its a nucleophile

Answer: (b)

137. Early fall of leaves and fruits in plants is caused by the deficiency of:

(a) phosphorus (b) potassium
(c) magnesium (d) nitrogen

Hints: That is senescence in plant leaves.

Answer: (a)

138. The counter torque produced in the moving coil of generator is called:

(a) Restoring torque (b) Deflecting torque

(c) Back motor effect (d) All of these

Answer: (c)

139. Select the most stable carbonium ion:

(a) $+\text{CH}_3$ (b) $+\text{CH}_3\text{CH}_2$ (c) $(\text{CH}_3)_2\text{CH}$ (d) $(\text{CH}_3)_3\text{C}^+$

Hints: Tertiary carbon is more stable because it has more hyperconjugative hydrogen.

Answer: (d)

140. The organisms developed with two heads and one trunk is called

(a) identical twins (b) Siamese twins

(c) dizygotic twins (d) fraternal twins

Hints: Siamese twins have two heads and one trunk.

Answer: (b)

141. 'Cynic and' '_____' are synonyms

(a) skeptic (b) secret (c) solitary (d) truthful

Hints: Cynic and skeptic are synonyms which means narrow minded people.

Answer: (a)

142. The inductive reactance of the coil having inductance of 0.5 henry in which AC of 50Hz flows is:

(a) 94.2 Ω (b) 1.57 Ω (c) 157 Ω (d) 9.42 Ω

Hints: $X_L = 2\pi fL = 157 \Omega$

Answer: (c)

143. Water is said to be permanently hard when it contains:

(a) carbonates of Ca^{2+} and Mg^{2+} ions

(b) Bicarbonates of Ca^{2+} and Mg^{2+} ions

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(c) sporozoites enter the liver cells.
(d) merozoites come out the liver cells.

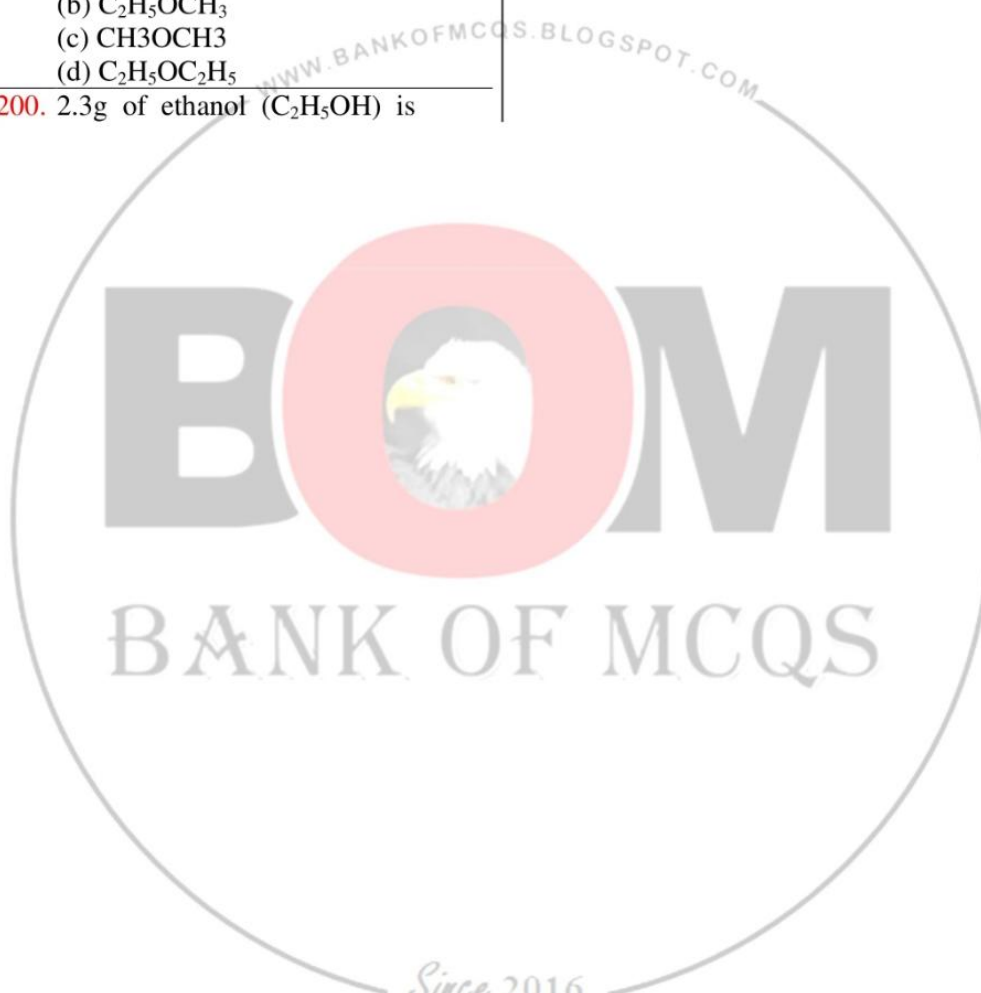
199. Which is an isomer of ethanol?

- (a) CH_3OH
- (b) $\text{C}_2\text{H}_5\text{OCH}_3$
- (c) CH_3OCH_3
- (d) $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$

200. 2.3g of ethanol ($\text{C}_2\text{H}_5\text{OH}$) is

added to 500g of water determine the molality of the resulting solution;

- (a) 0.01 molal (b) 0.1 molal
- (c) 1.1 molal (d) 1.0 molal





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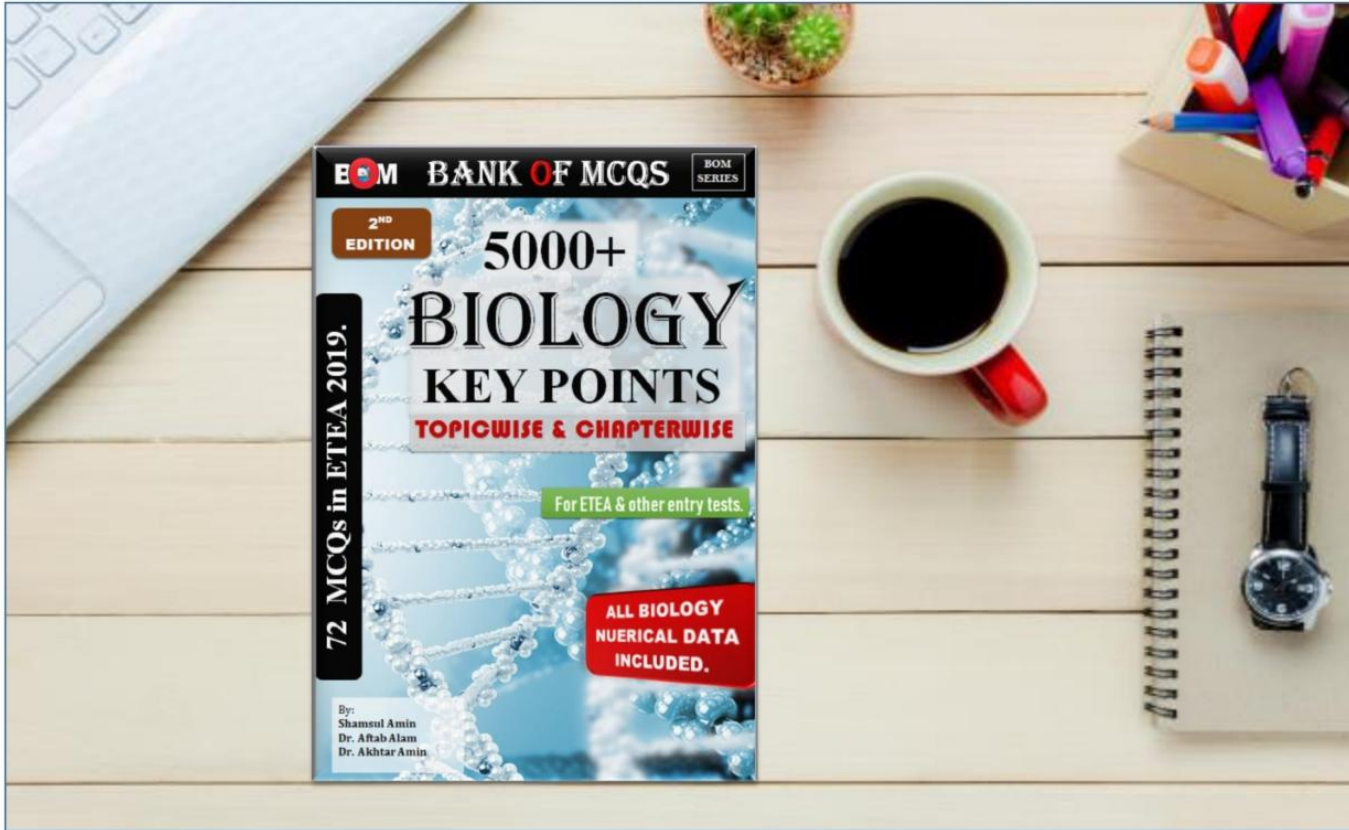
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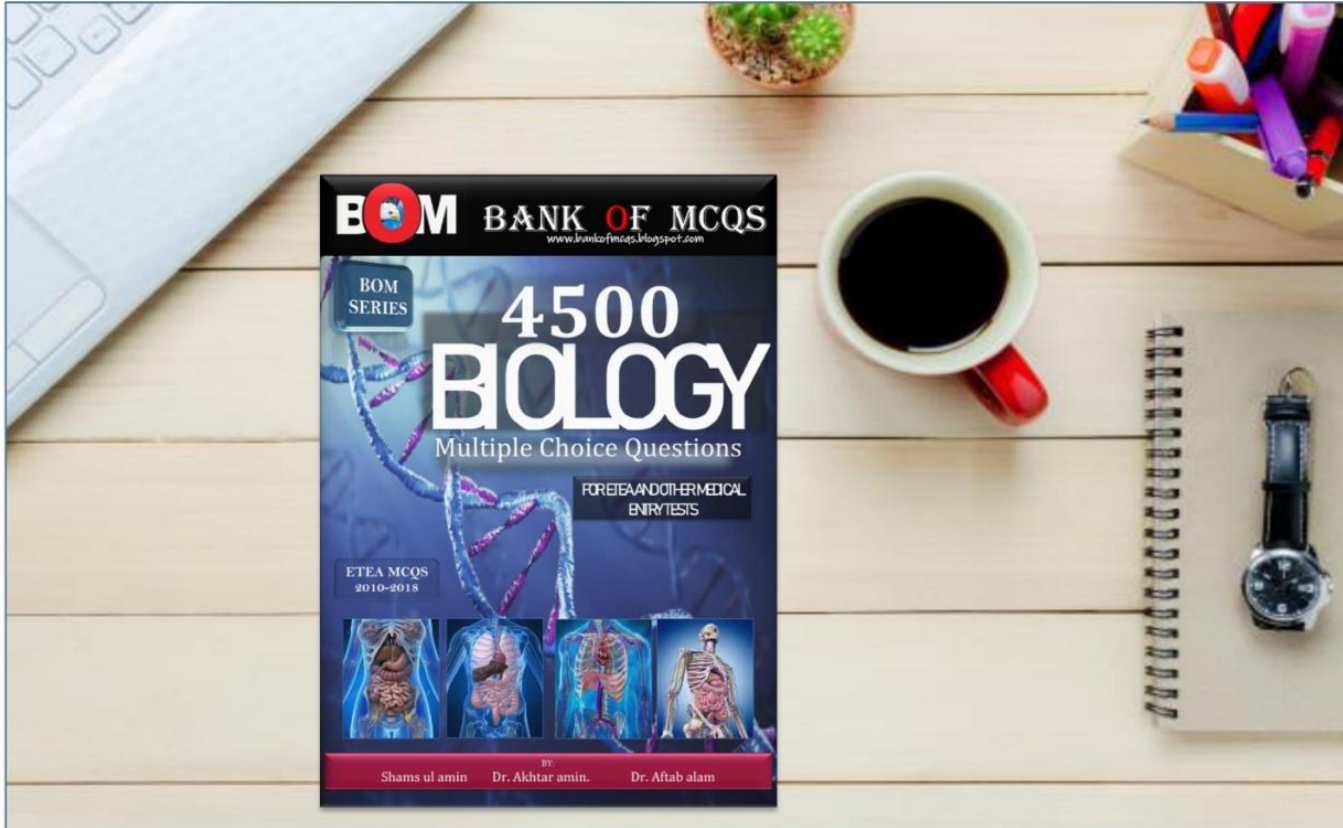
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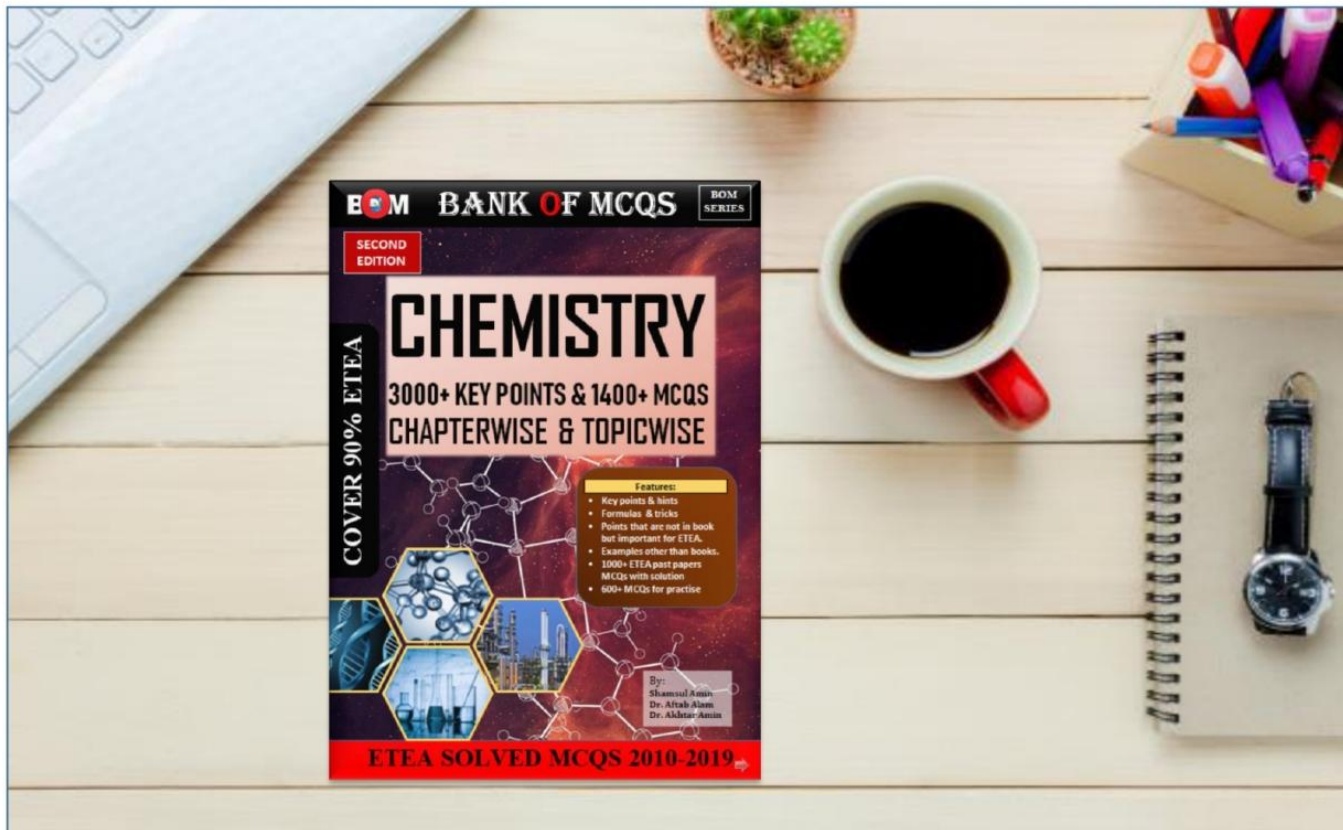
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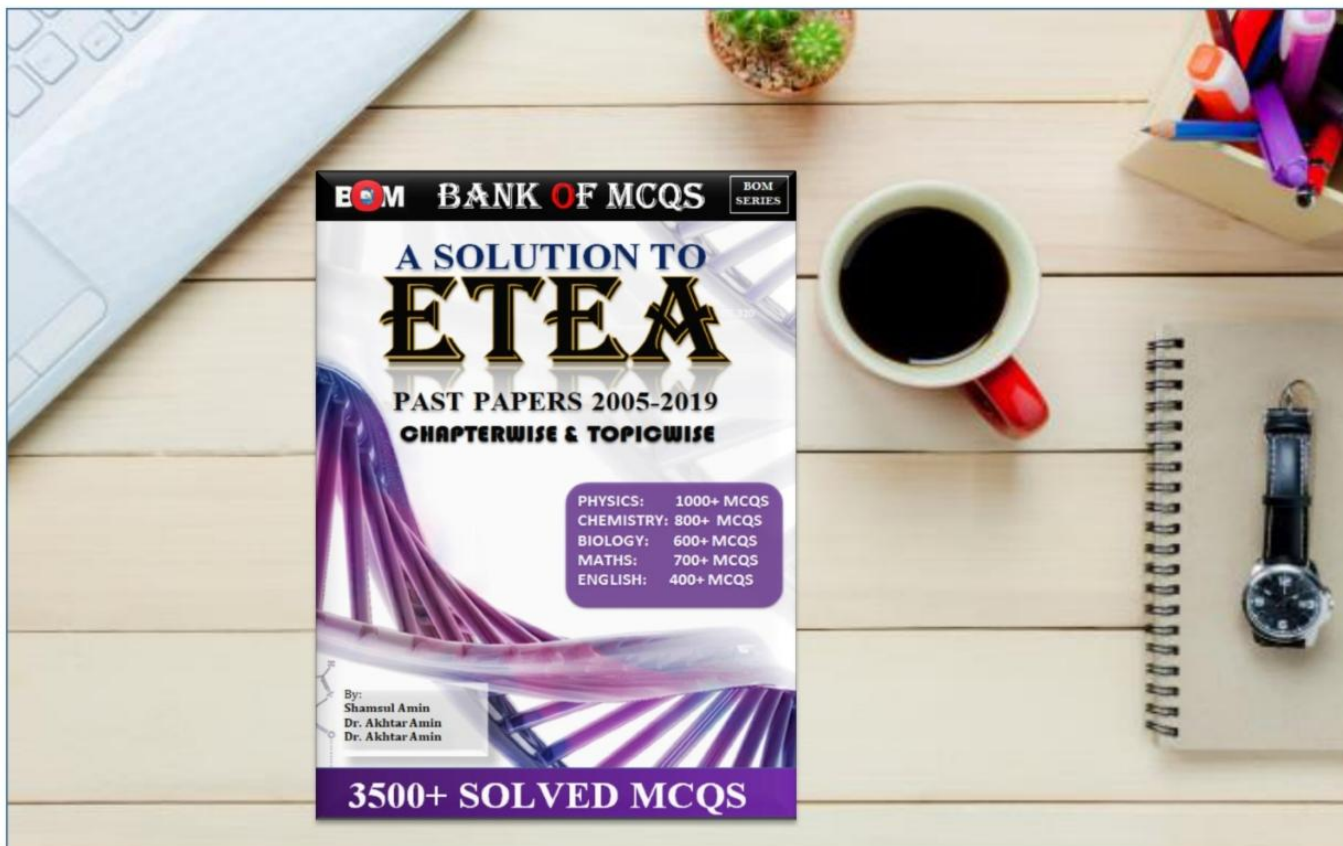
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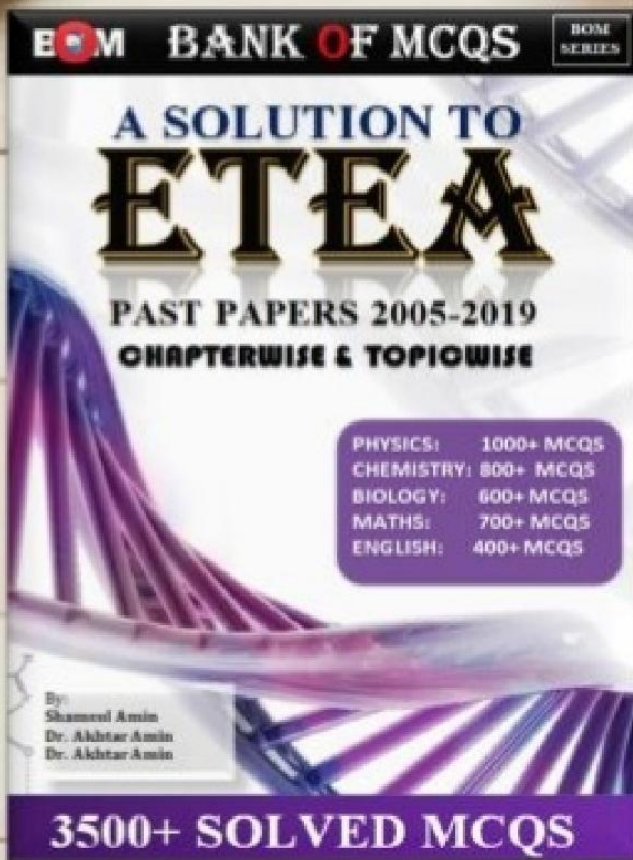
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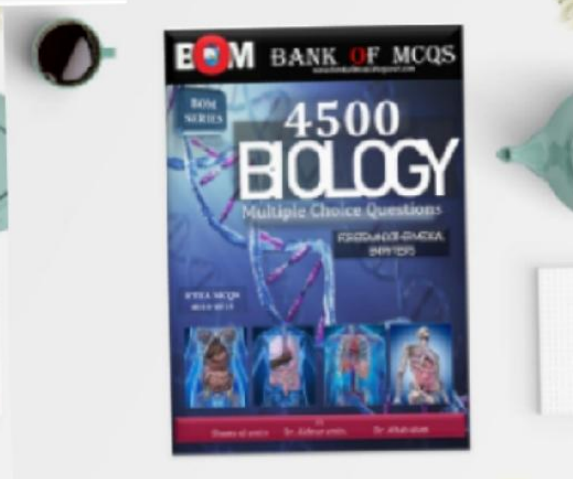
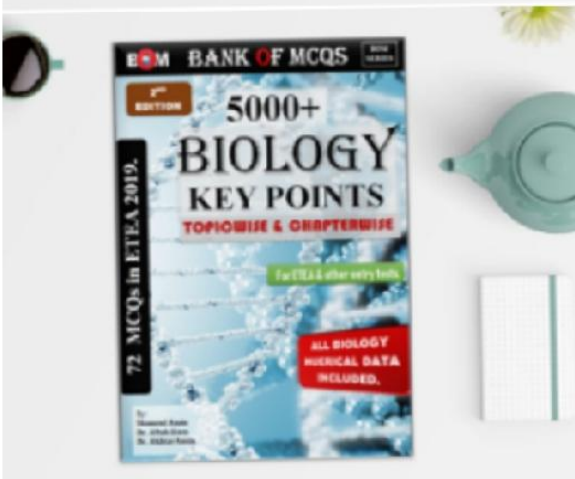
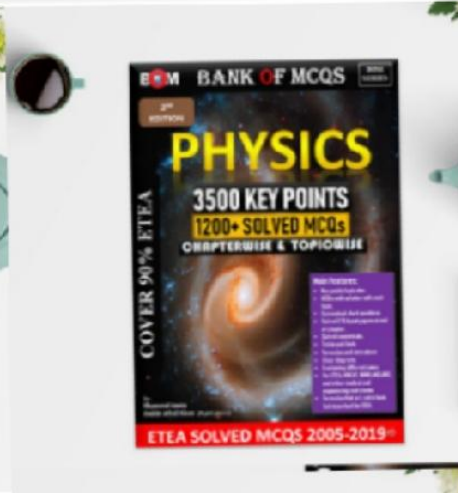
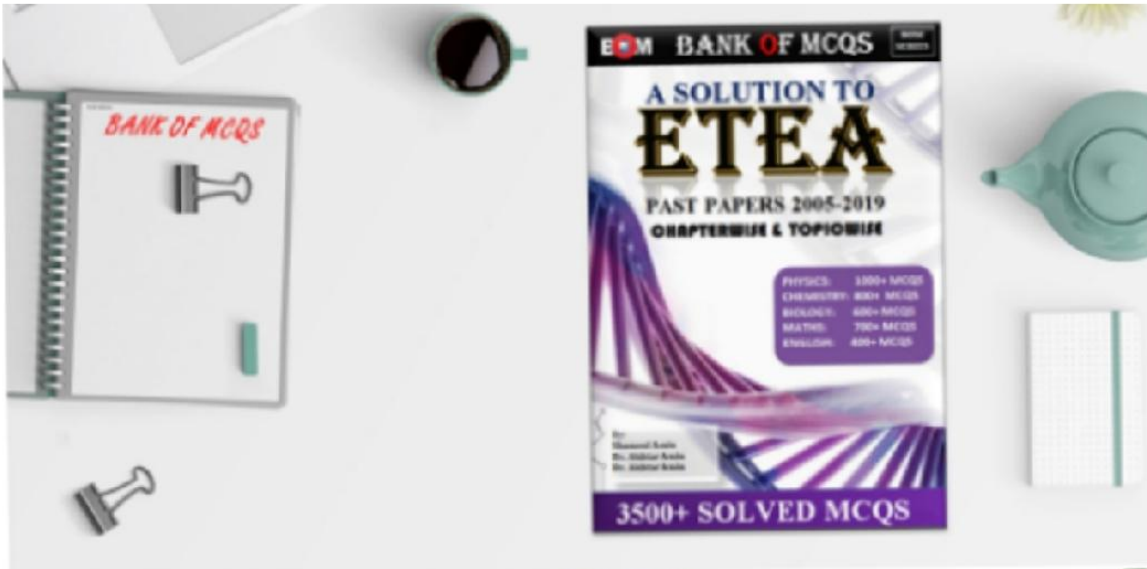
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- (a) K is a strong reducing
(b) Metallic k is unstable
(c) K ion is strong oxidizing
(d) K is strong oxidant
-
58. Through which medium the sound waves travel faster?
(a) Oxygen (b) Carbon dioxide
(c) Hydrogen (d) Nitrogen
-
59. -----
-
60. When ${}^n\text{P}_2 = 30$ then n =
(a) 5 (b) 3 (c) 6 (d) 0
-
61. The SI unit of the spring constant k is identical to:
(a) Energy (b) Pressure
(c) Density (d) Surface tension
-
62. The dimensions of impulse are similar to the dimensions of:
(a) Torque
(b) Work
(c) Momentum
(d) Force
-
63. If A B C are conformable for multiplication then $(ABC)^t =$
(a) $C^t B^t A^t$
(b) $B^t A^t C^t$
(c) $A^t B^t C^t$
(d) $B^t A^t C^t$
-
64. According to MOT oxygen molecule is paramagnetic due to:
(a) Presence of one unpaired electron
(b) presence of two unpaired electrons
(c) presence three unpaired electrons
(d) presence of four unpaired electrons
-
65. If the scalar product of two non-zero vectors A and B is zero then the magnitude of their vector product will be:
(a) AB (b) Zero (c) $AB \sin \Phi$ (d) $AB \cos$
-
66. If the vectors $ma+nb$ and $pq+pb$ are parallel then:
(a) $m = p, n=q$ (b) $m + n = p + q$
(c) $\frac{m}{p} = \frac{n}{q}$ (d) None of the above
-
67. We are eager _____ the scientist
(a) To meet
(b) Meet
(c) To have met
(d) Meeting
-
68. Ca^{++} ions are more hydrate than Na^+ ions because these are:
(a) Larger in size
(b) Smaller in size
(c) Divalent positively charged
(d) Small and divalent positively
-
69. Three points A B C are said to be collinear if they lie on the same:
(a) Line (b) Plane
(c) Quadrant (d) None of the above
-
70. Acid $\text{HClO}_4, \text{H}_2\text{SO}_4, \text{HCl}$ and HNO_3 have nearly equal strength in aqueous medium the phenomenon is called.
(a) Common ion effect (b) Leveling effect
(c) Ionization (d) Titration
-
71. The process in which the structure of the nucleus can be changed by boarding it with high energy particle is called.
(a) Fission reaction
(b) Fusion reaction
(c) Nuclear transformation
(d) All of the above
-
72. Which one of the following Grignard reactions could give rise to $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$?



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159. The process of superposing the sound waves on carrier waves is called:
(a) Rectification (b) Modulation
(c) Amplification (d) Transformation
160. $\sin(\alpha+\beta) - \sin(\alpha-\beta) =$
(a) $2 \cos \alpha \sin \beta$ (b) $2 \sin \beta \cos \alpha$
(c) $2 \sin \alpha \sin \beta$ (d) $-2 \sin \alpha \sin \beta$
161. if p_1 and p_2 are any two points on a coordinate line then $|p_1 p_2|$ denotes:
(a) Directed distance (b) Length
(c) Undirected distance (d) Both B and C
162. Dry CO_2 is passed through Grignard reagent in the presence of ether as a solvent the intermediate is decomposed with dil HCL which gives the compound:
(a) Primary alcohol (b) Acetone
(c) Carboxylic acid (d) Secondary alcohol
163. In simple AC capacitive circuit.
(a) the current leads the voltage by 90°
(b) the current and voltage are in phase
(c) the voltage leads the current by 90°
(d) the current lags from the voltage by 90°
164. Product of the roots of the equation: $ax^2+bx+c = 0$, where $a, b, c \in \mathbb{R}$ & $a \neq 0$
(a) c/a (b) $-c/a$ (c) Undefined
(d) 0
165. Mr. Alif Din is a/an ___ figure in the political scandal.
(a) Prominent (b) Outstanding
(c) Conspicuous (d) Remarkable
166. Which of the following reacts with hydrogen and nickel to form propane?
(a) $\text{CH}_3\text{CH}=\text{CH}_2$
(b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
(c) $\text{CH}_3\text{CH}=\text{C}(\text{CH}_3)_2$
(d) $\text{CH}_3\text{CH}_2\text{CH}=\text{CH}_2$
167. The reciprocal of bulk modulus is called:
(a) Plasticity (b) Conductivity
(c) Compressibility (d) Ductility
168. A natural element y has the electronic configuration $1s^2 2s^2 2p^6 3s^1$ it will gain or lose electrons to form an ion of valence:
(a) -2 (b) +2 (c) -1 (d) +1
169. Which of the following cannot be polarized?
(a) Sound waves (b) X-rays
(c) Radio waves (d) Light waves
170. The transpose of a row matrix is a
(a) Column matrix (b) Row matrix
(c) Square matrix (d) None of the above
171. The magnifying power of magnifying glass is 6. its focal length is:
(a) 6 cm (b) 3cm (c) 4cm (d) 5cm
172. The championship games is on this weekend ___ I am feeling a little nervous:
(a) since (b) But (c) Although
(d) And
173. Quality of fuel is judged from its octane number the best fuels are
(a) straight chain hydrocarbons
(b) branched chain hydrocarbons
(c) cyclic compounds
(d) aromatic compounds

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- circuit
Hints: d) On the right of R in the bridge circuit
132. In a conductor carrying an electron, we expect the electron drift speed to be:
(A) A much greater than the average electron speed.
(B) Much less than the average electron speed.
(C) About the same as the average electron speed.
(D) Less than the average electron speed at low temperature and greater at higher temperature.
Hints: d) Less than the average electron speed at low temperature and greater at higher temperature.
133. A cylindrical copper rod has resistance R, it reform to twice the original length with no change of volume. Its new resistance will be:
(A) 2 R (B) 4R (C) 8R (D) R/2
Hints: b) $R \propto \frac{l}{A}$
 $R' = \frac{\delta 2l}{A/2} = \frac{4\delta l}{A}$
 $R' = 4R$
134. Theoretical yield is always:
(A) Less than practical yield.
(B) Greater than actual yield
(C) Both are equal
(D) None of the above
Hints: a) Because theoretical value is always greater by performing practicals (Human error) will decrease practical value.
135. Which of the following rays are not electromagnetic radiations?
(A) X-rays (B) UV rays
(C) Cathode rays (D) Infrared rays
Hints: c) Actually electrons are emitted in form of cathode rays.
136. The energy level of an electron in a hydrogen atom are given by where n=1,2,3..... the energy required to excite an electron state is:
(A) 3.4ev (B) 4.5ev (C) 10.2ev (D) 13.6ev
Hints: d)
137. How many grams of Al₂O₃ will be obtained if 13.5g of aluminum completely reacts with oxygen as
 $4Al + 3O_2 \rightarrow 2Al_2O_3$
molar mass of Al=27g/mol.
(A) 25.5g (B) 27.54g (C) 54.27g (D) 14.27g
Hints: a) Because molar mass in g \times moles = 25.5 g
138. The resonance structure differs from one another only on the basis of:
(A) Position of atoms
(B) No of unpaired electrons
(C) Position of electrons.
(D) Position of nuclei
Hints: b) Because unpaired electron are responsible for resonance
139. Chiral carbon is the carbon which is attached to
(A) 4 identical atoms
(B) 4 different atoms
(C) 3 similar atoms and 1 dissimilar atom. (D) 2 similar atoms and 2 dissimilar atoms.
Hints: b) Chiral carbon Different group attached called chiral carbon (asymmetric carbon)



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150. A simple pendulum is suspended on the roof of a lift when the lift is moving downward with an acceleration a ($a < g$), then its time period is given by $T = 2\pi \sqrt{\frac{l}{g}}$ where g is equal to
(A) g (B) $g-a$ (C) $g+a$ (D) g^2
Hints: b) $T = 2\pi \sqrt{\frac{l}{g-a}}$ apparent weight decreases.
151. When a body of mass m is taken to the bottom of a deep mine, its
(A) Mass increases (B) Mass decreases
(C) Weight increases (D) Weight decreases
Hints: d)
 $W = mg$
 $W = \text{constant } g$
 Wag
 $ga \frac{1}{r^2} g \text{ decreases}$
152. What is the oxidation state of copper in CuF_6 ?
(A) $1+$ (B) $2+$ (C) $3+$ (D) $4+$
Hints: a) CS_2CuF_6 so oxidation state will be $+4$
153. The conversion of dichromate to chromate is brought out by the addition of:
(A) Acid
(B) Base
(C) Salt
(D) Both ((A) & ((C)
Hints: b) dichromate \rightarrow chromate
 $\text{K}_2\text{Cr}_2\text{O}_4 \rightarrow \text{Cr}_2\text{O}_4$
154. Ethyne is treated with HBr , the product formed is
(A) $\text{CH}_3\text{CH}_2\text{Br}$
(B) CH_3CHBr_2
(C) $\text{CH}_2\text{BrCH}_2\text{Br}$
(D) CH_3CBr_3
Hints: a)
155. $\int kx \, dx = \frac{ax}{k} + C$
(A) $\frac{ax}{k} + C$
(B) $\frac{akx}{k \ln a} + C$
(C) $akc \ln a + C$
(D) $\frac{\ln a}{k} + C$
Hints: b) formula
156. An example boson is a
(A) Photon (B) Electron (C) Neutrino (D) Neutron
Hints: a) photon
157. If $h^2 < ab$, then the equation $ax^2 + 2hxy + by^2 = 0$ represents a pair of straight lines, which are:
(A) Real (B) Coincident (C) Imaginary
(D) Perpendicular
Hints: c) Imaginary
158. Bernoulli's equation can be derived from the conservation of:
(A) Energy (B) Mass (C) Volume
(D) Pressure
Hints: a) $\Delta w = \Delta K.E + \Delta P.E$ This equation derive from conservation of energy.
159. Which of the following element does not belong to p-block of the periodic table?
(A) Lead (Pb) (B) Helium (He)
(C) Phosphorus (P) (D) Aluminum (Al)
Hints: a) Lead (Pb) Because it is (d) block element
160. Compound nitrated with difficulty is
(A) Toluene (B) Phenol
(C) Nitro Benzene (D) Benzene



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- Diencephalon which governs the omeostasis of human body.
13. How many pairs of cranial nerves are mixed in nature?
a) 02 pairs
b) 04 pairs
c) 06 pairs
d) 08 pairs
Hints: b) Cranial nerves originate or lead to the brain. There are 12 pairs which pass through foramen of skull. 3 pairs are sensory in nature, 5 pairs are motor and 4 pairs are mixed in nature.
14. 80 – S Ribosome is formed by the combination of:
a) 30S and 40S
b) 70S and 10S
c) 50S and 30S
d) 60S and 40S
Hints: d) 80S: Ribosome consist of small subunit and large subunit i.e 40S and 60S, respectively. It helps in protein synthesis.
15. The electronic transition that is involved in the visible region is:
a) $\sigma - \sigma$
b) $d - d$
c) $\pi - \pi$
d) $\pi - \sigma$
Hints: c) $\sigma - \sigma^*$ Transition require high energy so, it occurs in UV. $\pi - \pi^*$ ouccurs in visible region, because it require less energy as compared to $\sigma - \sigma^*$
16. Hydrolysis of ester in the presence of KOH is called:
a) Estrification
b) Decarboxylation
c) Saponification
d) Neutralization
Hints: c) A process that produce soap.
17. Salts which dissolve in water with evolution of heat. The effect of temperature on their solubility will be:
a) Increased with increase in temperature
b) Decreased with increase in temperature
c) Solubility does not change
d) In some cases it increases while in others it decreases
Hints: b) The heat of reaction is negative therefore the solution may decrease.
18. Two long parallel wires x and y carrying a current of 3A and 5A respectively. The force per unit length experienced by x is 5×10^{-5} N to the right, the force per unit length experienced by wire y is:
a) 2×10^{-5} N to the left
b) 3×10^{-5} N to the right
c) 5×10^{-5} N to the right
d) 5×10^{-5} N to the left
Hints: d) current direction is same in both law 5×10^{-5} right = 5×10^{-5} N left
19. The charged particle is situated in a region of space and it experience a force only when it is in motion, it can be deduce that the region of space and it experience a force deduce that



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$$\frac{1}{\lambda} = R \left(\frac{1}{(2)^2} - \frac{1}{(3)^2} \right)$$

40. Carotenoids pigments are:

- a) NAD
- b) FAD
- c) NADP
- d) ADP

Hints: d) coenzymes helps enzymes in metabolism e.g NAD, NADP, FAD helps in oxidation reduction reactions.

41. Carotenoids pigments are:

- a) Yellow, Red, Green, blue
- b) Orange, Yellow, Red, brown
- c) Green, Yellow, Blue, Brown
- d) Blue, Red, Green, Yellow

Hints: b) Carotenoids absorb light in blue, green violet region and reflect yellow, orange and red wavelengths.

42. Polio immunization vaccine is effective:

- a) 50 %
- b) 60 %
- c) 80 %
- d) 90 %

Hints: d) According to CDC 90% of polio vaccine recipients develop protective antibodies against polio virus.

43. $\text{NH}_4\text{OH}_{(aq)} \rightarrow \text{NH}_4^+ + \text{OH}^-_{(aq)}$

Consider the above ionization. Ammonium choride is added to the system.

Select the correct statement

- a) The equilibrium will shift to the right
- b) The equilibrium will shift to the left
- c) The equilibrium remain

undisturbed

d) The equilibrium will be attained quickly

Hints: b) The equilibrium will shift to left or backward because of common ion effect

44. Select molecule that has unpaired electrons in anti-bonding molecular orbitals:

- a) N_2
- b) Cl_2
- c) H_2
- d) O_2

Hints: d) O_2

45. Waxes are the esters of fatty acids with high molecular weight.

- a) Monohydroxy alcohols
- b) Dihydroxy alcohols
- c) Trihydroxy alcohols
- d) All of the above

Hints: a) waxes are long-chain saturated and unsaturated fatty acid esters with monohydroxy alcohols, which have high molecular weight. While fats and oils have esters of fatty acid having glycerol and trihydroxy alcohol.

46. The percentage error in the measurement of mass and speed are 5 % or 6 % respectively the maximum error in the measurement of K.E is:

- a) 17 %
- b) 30 %
- c) 15 %
- d) 90 %

Hints: a) measured value multiplied by power. $\text{K.E} = \frac{1}{2}$



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- to d to get half filled and fully filled d.
129. The presence of microorganisms in drinking water is determined by:
- COD
 - TOC
 - BOD
 - TDS
- Hints: c) BOD
130. For ohmic substance, the electron drift velocity is proportional to:
- Cross sectional of the sample
 - The length of sample
 - The mass of an electron
 - The electric field in the sample
- Hints: d) $V_d \propto E$
131. The sum of the emf and potential differences around a closed circuit is zero is a consequence of:
- Ohm's law
 - Newton's law
 - Conservation of energy
 - Conservation of charge
- Hints: c) KvL
132. Four wires meet at a junction. The first carries 4A into the junction, the second carries 5A out of the junction, and the third carries 2A out of the junction. The fourth carries:
- 7 A out of the junction
 - 7 A into the junction
 - 3 A out of the junction
 - 3 A into the junction
- Hints: d)
133. The principle of a simple form of mass spectrometer ions are passed through narrow slits S^1 and S^2 and into a velocity selector. The ions after passing through the slit S^3 are deviated by a uniform magnetic field. The quantities that must remain constant for all ions arriving at a photographic plate are:
- Charged
 - Charged / mass
 - Kinetic energy
 - Mass
- Hints: a) spectrometer velocity equation
134. The proper time between two events is measured by a clock at rest in a reference frame in which the two events:
- Occurs at the same time
 - Occurs at the same coordinates
 - Are separated by the distance a light signal can travel during the time interval
 - Satisfy none of the above
- Hints: b) X, Y, Z, t coordinates
135. He said to me, what a stupid fellow you are!
[Indirect form of the sentence is]:
- He exclaimed that I was a very stupid fellow.
 - He told me that you were a stupid fellow.
 - He exclaimed that what a stupid fellow I was.
 - He did tell me that I had been a stupid fellow.
- Hints: a) He exclaimed that I



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- was a very stupid fellow.
136. A hormone that prevents senescence in leaves is:
a) Abscisic acid
b) Photo nasty
c) Seisomonasty
d) Demonasty
Hints: a) Abscisic acid is plant growth inhibitor and promote senescence (leaf fall).
137. The following elements H.N.P and Mg are included in:
a) Macronutrients
b) Micronutrients
c) Trace elements
d) Minor elements
Hints: a) Macronutrients are required in larger amounts, so they are provided through fertilisers.
138. The only human disease caused by VIROID is:
a) Hepatitis A
b) Hepatitis B
c) Hepatitis C
d) Hepatitis D
Hints: d) Viroids are infectious agents composed exclusively of a single piece of circular single stranded RNA which has some double-stranded regions. The hepatitis D viroid causes liver cell death.
139. The cathode in lead storage battery is made of:
a) Lead
b) Lead oxide
c) Lead hydroxide
d) None of the above
Hints: b) $PbO_2 + 2e^- + 4H^+ +$
- $SO_4^{2-} \rightarrow PbSO_4 + 2H_2O$
140. The oxidation state of carbon in Na_2C_2 is:
a) +4
b) +2
c) -1
d) -4
Hints: C) $2(+1) + 2(x) = 0$
 $+2+2x=0$
 $X=-1$
141. Choose atom that having spin quantum number $\frac{1}{2}$:
a) ^{12}C
b) ^{15}N
c) ^{16}O
d) ^{32}S
Hints: b) $^{15}N_1$ having the odd number of electron.
142. If p is the momentum of an object of mass m, then expression p^2/m has the same unit as:
a) Acceleration
b) Energy
c) Force
d) Impulse
Hints: b) Energy $W=FS$,
 $W=kgm^2/s^2$
143. Conservation of linear momentum is equivalent to:
a) Newton's 1st law of motion
b) Newton's 2nd law of motion
c) Newton's 3rd law of motion
d) None of the above
Hints: a) $F = \frac{\Delta P}{\Delta t}$, $0 = \frac{\Delta P}{\Delta t}$, $\Delta p=0$,
 $p_i = p_f$
144. He was in bed all day yesterday.
a) Laying
b) Lying



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- d) 360 N downwards
Hints: b) Velocity is constant
 $F=0$
152. He said, "May this child live long." [Indirect form of the sentence is;]
a) He prayed that that child may live long.
b) He prayed that that child will live long.
c) He prayed that that child might live long.
Hints: c) He prayed that that child might live long.
153. Blood pressure towards the brain during rest hours is:
a) 850 mm / minute
b) 900 mm/minute
c) 750 mm/ minute
d) 730 mm/ minute
Hints: c) 750 mm/ minute
154. Photo-respiration can generate:
a) 4-ATP
b) 36-ATP
c) 32-ATP
d) NO-ATP
Hints: d) Breakdown of RuBP into PGA and Phosphoglycolic acid in the presence of O_2 is called as Photorespiration. It is not a respiration process.
155. Dark reaction gets completed by the regeneration of:
a) PGA
b) PGAL
c) RuBP
d) RUBISCO
Hints: c) 6 Riboluse Phosphate + ATP ----> RubP (It is now available to start another Dark reaction).
156. Sucrose on hydrolysis yield:
a) Glucose
b) Glucose and fructose
c) Glucose and maltose
d) Maltose and fructose
Hints: b) Sucrose is OligoSacchride (Di saccharide).
157. $N_2 + 3H_2 \xrightarrow{T} 2NH_3$
In the above reaction the limiting reagent is:
a) N_2
b) H_2
c) Ammonia
d) None of these
Hints: a) N_2
158. If absolute temperature of the gas is doubled and pressure is increased 4 times, then the volume becomes:
a) Half
b) Doubled
c) 4 times
d) Unchanged
Hints: a) Half, $pV = nRT$, $v = \frac{nRT}{p} = \frac{2nRT}{24p} = \frac{V}{2}$
159. Four 20Ω resistors are connected in parallel and combination is connected to parallel and combination is connected to a 20 V emf device. The current in the device is:
a) 0.25 A
b) 1.0 A
c) 4.0 A
d) 5.0 A
Hints: c) $\frac{1}{R} = \frac{1}{20} + \frac{1}{20} + \frac{1}{20} + \frac{1}{20} = \frac{1+1+1+1}{20} = \frac{4}{20}$



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$$\frac{4}{20}$$

$$R = 5$$

$$V = 20v$$

$$I = ?$$

$$I = V/R$$

$$I = 20/5, = 4.0A$$

160. An electron is moving north in a region when the magnetic field is south. The magnetic force exerted on the electron is:

- a) Zero
- b) Up
- c) Down
- d) East

Hints: a) $F = qVB \sin(80) = 0$

161. A 0-0.1 A moving coil meter of 5Ω resistance can be converted in to A 0-2 a meter by a resistance r with the meter when R is:

- a) 0.025Ω in parallel
- b) 0.025Ω in series
- c) 0.050Ω in parallel
- d) 0.050Ω in series

Hints: a) $r = \frac{I_g R_g}{I - I_g}$

162. The ratio between the velocity of sound in air at 4 atm and that at 1 atm pressure would be:

- a) 1:1
- b) 4:1
- c) 1:4
- d) 3:1

Hints: a) $V = \sqrt{rP/\delta}$

163. His bad friend will ruin him. [passive form of the sentence:]
- a) He will ruin has bad friends.
 - b) He is ruined by his bad

friends.

- c) He will be ruined by his bad friends.
- d) He is being ruined by his bad friends.

Hints: c) He will be ruined by his bad friends.

164. "Foraminifera" helps to determine the:

- a) Generation time
- b) Geological age
- c) Ecological time
- d) Physiological age

Hints: c) Foraminifera helps to determine the climate.

165. Phytochrome "Pr" absorbs red light of wave length

- a) 600 nm
- b) 660 nm
- c) 560 nm
- d) 730 nm

Hints: b) Pr is a blue form that absorbs red light (660nm) and Pfr is a Blue green form that absorbs far red light (730nm).

166. Basidiomycota is also called as:

- a) Club-mosses
- b) Club-fungi
- c) Sac-Fungi
- d) Bread mold

Hints: b) The Basidiomycota or Club fungi produce sexual spores (basidiospores) externally on a club shaped structure called as Basidium.

167. Choose group that cause solubility of the dye in acids.

- a) -OH
- b) -NR₂
- c) -SO₂H



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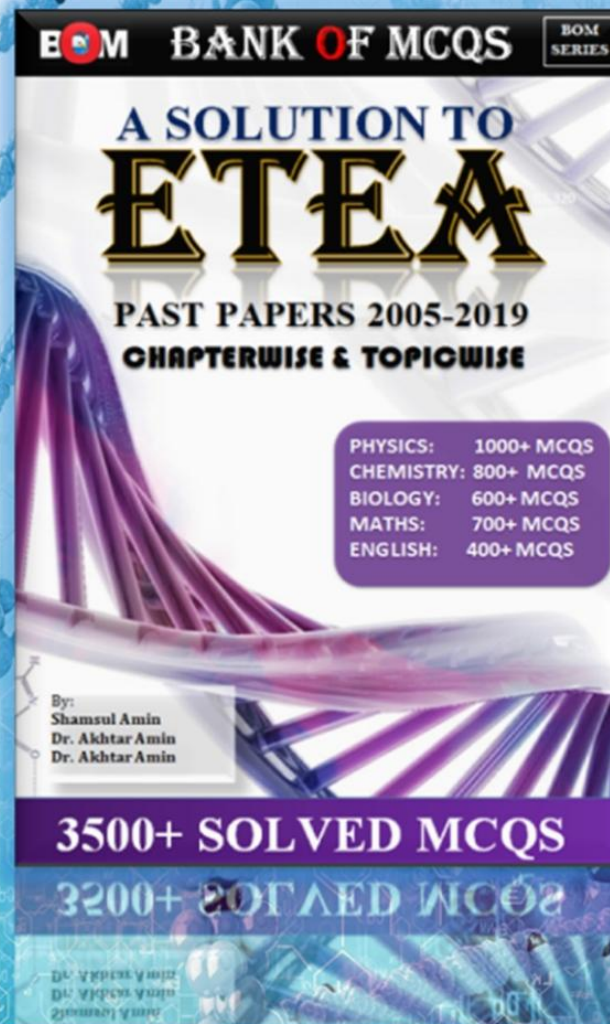
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MEDICAL PAPER 2014

S.No	MCQs
1.	<p>A current of 20.0A flows through a battery with an emf of 6.20 V. If the internal resistance of the battery is 0.01Ω, what is the terminal voltage? (A) 6.40V (B) 31.0V (C) 1.24V (D) 6.00V Hints: $V_t = IR$ $\epsilon = (R + r) I$ $\epsilon = IR + Ir$ $\epsilon = V_t + Ir$ $V_t = \epsilon - Ir$ (by putting values we get 6.00V)</p>
2.	<p>Both DNA and RNA are synthesized by the process of: (A) Transcription (B) Replication (C) Polymerization (D) PCR Hints: Polymerization is the process during which small molecules combine to form large molecules, as DNA and RNA both are large molecules made up from small molecules or Nucleotids. Transcription process is the formation of mRNA from DNA Replication is the duplication of DNA PCR, PCR is used to make copies of DNA</p>
3.	<p>The cross between two dissimilar individuals is called: (A) Test cross (B) Interbreeding (C) Epistasis (D) Hybridization Hints: Test cross: test cross is a cross during which dominant</p>
	<p>individual of F1 generation are crossed with homozygous recessive parents.</p>
4.	<p>'CHUCKLE' mean: (A) Bouquet of flowers (B) displeasing manner (C) suppressed laughter (D) religious movement</p>
5.	<p>Cell wall of gram positive bacteria is composed of: (A) Glycolipids (B) Glycoproteins (C) Lipoproteins (D) Peptidoglycan Hints: Cell wall of all bacteria (Gram positive and gram negative) is made up from peptidoglycan which is also called murein.</p>
6.	<p>Shade loving plants are called: (A) Halophytes (B) Mesophytes (C) Sciophytes (D) Xerophytes Hints: Halophytes, mesophytes and xerophytes all these are groups of plants that depend upon water availability. Sciophytes. These are shade loving plants.</p>
7.	<p>Which of the following is a Lewis acid? (A) CH_3OH (B) AlCl_3 (C) NH_3 (D) CH_3OCH_3 Hints: (b) AlCl_3 is Lewis acid. The Al in AlCl_3 is short of two electrons for its complete octet and can accept a pair of electrons from a base like NH_3.</p>



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- (C) The potential difference across any component connected to the battery will be 9.0V.
(D) There will always be 9.0V across the battery terminals
Hints: (d)
-
63. Using monochromatic light, interference fringes are produced on a screen placed a distance D from a pair of slits of separation a . the separation of the fringes is x . both a and D are now doubled. What is the new fringe separation?
(A) $2x$ (B) x (C) $3x$ (D) $4x$
-
64. Select the true statement about the amorphous solids:
(A) The amorphous substances have sharp melting point
(B) The amorphous substances do not have fixed melting point
(C) The amorphous substances have proper geometrical shapes.
(D) The particles in amorphous substance are arranged in an orderly manner.
Hints: (b) The amorphous substances do not have fixed melting points due to lack of regular and orderly arrangement of particles and lack of identical bonding throughout among the particles.
-
65. Both NaNO_3 and CaCO_3 crystallize in Rhombohedral forms therefore they are:
(A) Allotropes (B) Polymorphous
(C) Isomorphous (D) None of these
Hints: (c) Isomorphs have different chemical compositions but the same crystalline forms / shapes. Both
-
- AgNO_3 and CaCO_3 are different chemical compounds but have rhombohedral forms.
-
66. Pure water freezes at 0°C and boils at 100°C at standard conditions. Calcium chloride was added to pure water. What do you expect about its freezing point and boiling point.
(a) No change in its freezing point and boiling point
(b) Freezing point increases and boiling point decreases.
(c) Freezing point increases and boiling point increases
(d) Freezing point decreases and boiling point increases
Hints: (d) when a solute is added into a pure solvent, the freezing point of resulting solution is decreased and boiling point is increased.
-
67. The internal energy of a fixed mass of an ideal gas depends on:
(A) Pressure but not volume or temperature.
(B) Temperature but not pressure or volume.
(C) volume but not pressure or temperature.
(D) Pressure and temperature but not volume.
Hints: (d) When a solute is added into a pure solvent, the freezing point of resulting solution is decreased and boiling point is increased.
-
68. A spring obeying Hook's law has an unstretched length of 50mm and a spring constant of



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form sac like Structure called ascus in which sexual spore therefore these fungi are called sec fungi.

78. Blac bread mold is:
(A) Rhizopus
(B) Penicillium
(C) Mucor
(D) Yeast
Hints: Rhizopus is the black mold or fungi which develops on bread.
79. Which of the statements about paper chromatography is not correct:
(A) Paper chromatography is an example of partition chromatography.
(B) Paper chromatography greatest use is in the separation of biological active systems.
(C) Paper chromatography is also applicable for the separation of some inorganic cations.
(D) Paper chromatography is always used for quantitative analysis.
Hints: (d) Paper chromatography is generally used for both quantitative and qualitative analysis.
80. Equal volume of different gases under same condition of temperature and pressure contain the same number of particles. The above statement is of:
(A) Avogadro's law
(B) Graham's Law
(C) Dalton's law
(D) hund's rule
Hints: (a) Avogadros`s law
81. Which is the correct statement?
(a) The average kinetic energy of the molecules depends on the

volume in which the gas is enclosed
(b) The average kinetic energy of the molecules in the gaseous state is proportional to the pressure.

(c) The average kinetic energy of the molecules in the gaseous state is proportional to the temperature.

(d) All of the above

Hints: (c) According to kinetic Molecular Theory, "The average kinetic energy of the molecules in the gaseous state is proportional to the absolute temperature.

82. In a vibrating cord the point where the particles are stationary is called:
(A) Crest
(B) Anti-node
(C) Node
(D) Trough

83. The minimum frequency of incident light required to emit photoelectrons from the metal surface is called:

- (a) Critical frequency
(b) Intermedicate frequency
(c) Work function
(d) Threshold frequency

Hints: (d) The minimum frequency of incident light required to emit photoelectrons from the metal surface is called threshold frequency.

84. A racing car accelerates uniformly through three gear changes with the following average speeds: 20ms⁻¹for 2.0s, 40ms⁻¹for 2.0s and 60ms⁻¹for 6.0s.

What is the overall average speed of the car?



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$> d > f$.

99. Several resistors are connected in parallel the resistance of their equivalent resistor will:

(A) Increase (B) Decrease
(C) Not change (D) None of these

Hints: (b) $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots$

100. Which of the following series lie in the visible region?

(A) Lyman (B) Paschen
(C) Balmer (D) Pfund

Hints: (c) Balmer series of spectral lines lies in the visible region. This series of spectral lines is produced when electron jumps from $n_2 = 3, 4, 5, 6, 7$ to $n_1=2$

101. Kirchoff's first law (KCL) is based upon the law of conservation of:

(A) Charge (B) Energy
(C) Mass (D) momentum

Hints: (b) Kirchoff's 1st law is based upon the law of conservation of charge. According to which the flow of charge is conserved and does not deposit at the junction.

102. Accessory pigments are:

(A) Red-Yellow-Green
(B) Red-Orange-Blue
(C) Orange-Blue-Green
(D) Red-Orange-Yellow

Hints: Accessory pigments in photosynthesis are the different form of carotenoids which are red-orange-yellow.

103. Chemiosmosis occurs in the:

(A) Grana (B) Stroma
(C) Thylakoids (D) InterGrana

Hints: Chemiosmosis is the process of ATP synthesis inside the

mitochondria. Therefore no one of the given option is correct.

104. Select the incorrect Statement:

A) Molecule may gain electron to form molecular anion.
B) Molecule may lose electron to form molecular cation

C) Molecular cations are less abundant than molecular anions

D) These molecular ions can be formed by passing high energy electron beam through a gas.

Hints: (c) Molecular cations are more abundant than molecular anions. Molecular cation are formed by removal of electron from molecular by bombardment with high

energy particles in mass spectrometry.

105. Choose the correct Statement:

A) The most direct and accurate method for determining atomic masses uses mass spectroscopy.

B) The indirect but accurate method for determining molecular masses uses mass spectroscopy.

C) Collision between the electrons and the atoms produces negative ions by absorption of electrons by atoms or molecules.

D) The first application of the mass spectroscopy was the demonstration to detect various isotopes of Argon.

Hints: (a) Mass spectroscopy is the most accurate and method for determining atomic masses.

106. The partition coefficient of

Iodine distribution between two immiscible liquids, water and carbon (tetrachloride) is given below:



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- (a-x)² is a straight line.
114. Which statement correctly describes a nucleon?
(a) Any atomic nucleus (b) A radioactive atomic nucleus
(c) A neutron or a proton.
(d) A neutron proton or an electron.
Hints: (c)
115. An object travels at constant speed around a circle of radius 1.0m in 1.0s. What is the magnitude of its acceleration?
(A) Zero
(B) 1.0 ms⁻¹
(C) 2π ms⁻¹
(D) 4π-2ms⁻²
Hints:
116. An alternating current i/A varies with time t/s according to the equation $i = 5 \sin(100\pi t)$. What is the mean power developed by the current in a resistive load of resistance 10Ω?
(A) 250W (B) 500W (C) 125W (D) 160W
 $I_0 = 5$
Hints: (a)
 $P = I^2 R = (5)^2 \times 10 = 250 \text{ watt}$
117. The oxygen carrying capacity of hemoglobin in human when the blood is 100% oxygenated is:
(a) 19.4 ml
(b) 19.6 ml
(c) 20 ml
(d) 21 ml
Hints: Maximum oxygen carrying capacity or 100 ml of Blood is 20 ml oxygen.
118. Which of the following fish have 14 pairs of gill slits?
(a) Dog fish
(b) Lamprey
(c) Cat fish
(d) Ray fish
Hints: No one of the following have 14 pairs of gills slits. Only lamprey have 7 pairs or 14 gill slits.
119. Liquid crystalline substances are used to locate tumors in the body because:
A) These parts of the body are warmer than the surroundings
B) These parts of the body are cooler than the surroundings
C) These parts of the body are constantly increasing and decreasing with the temperature.
D) None of the above.
Hints: (a) These parts of the body are warmer than the surroundings and can be detected by change in the behavior of liquid crystals which are sensitive to temperature change.
120. The potential difference between a pair of similar. Parallel conducting plates is known. What additional information is needed in order to find the electric field strength between the plates?
A) Separation of the plates.
B) Separation and dres of the plates.
C) Permittivity of the medium separation of the plates.
D) Permittivity of the medlum separation and area of the plates.
Hints: (c) permittivity of the medium separation of plates.
121. In an AC capacitive circuit current and voltage phase relation is:
(A) In-phase



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- (B) current leads voltage by 90°
(C) Voltage leads current by 90°
(D) Current leads voltage by 180°
Hints: (a) In an AC capacitive circuit current and voltage phase relation is in $-$ phase.
-
122. A capacitor which has a capacitance of 1 farad will:
(a) Fully charged in 1 second by a current of 1 ampere.
(b) Store 1 coulomb of charge at potential difference of 1 volt
(c) Gain 1 joule of energy when 1 coulomb of charge is stored on it.
(d) Discharge in 1 second when connected across a resistor of resistance 3 ohm.
Hints: (b) $Q = CV$, $C = \frac{Q}{V}$, = $\frac{1 \text{ coulomb}}{1 \text{ volt}}$
-
123. In which of the following pharynx opens directly into Intestine?
(A) Planaria (B) Earthworm
(C) Cockroach (D) Snail
Hints: Only in planaria the pharynx directly open into intestine, while in all other pharynx into oesophagous.
-
124. Bile is released from the gall bladder by the action of:
(A) Gastrin (B) Cholecystokinin
(C) Secretin (D) Renin
Hints: Cholecystokinin control the secretion of bile from gall bladder. Secretin control pancreatic Juice. Gastrin control stomach secretion or gastric juice
-
125. Choose the correct sentence:
(A) He will reach in two hour time.
(B) He will reach in two hour time.
(C) He will reach in two hour time.
(D) He will reach in two hour time.
-
126. To decrease the salt potentially the Guard cells absorb:
(A) Sodium Ions (B) Magnesium ions
(C) Potassium ions (D) Calcium ions
-
127. The product of light dependent reactions are:
(A) RUBP + ATP (B) RUBP + PGAL
(C) NADPH + ATP (D) PGAL + ATP
Hints: During light reaction from sun light and H_2O using PSI and PSII ATP and pGAL is produced.
-
128. The committee dissented from the report's conclusions. The underlined word means:
(A) Differed (B) Joined
(C) Deliberated (D) Agreed
-
129. All of the following are gametophytes except:
(A) Club Mosses
(B) Funaria
(C) Liver-Worts
(D) Horn-Worts
Hints: Funaria, liver worts, horn-worts all these are bryophytes which are gametophytes while club mosses are sporophytes which produce spores.
-
130. All of the following are dioecious except:
(A) Ulva (B) Funaria
(C) Marchantia (D) Polytricum
-
131. The van der waals equation of state for non-ideal gases differs from the ideal gas law in that it accounts for:
(A) The mass of each molecule of the gas.



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II) The volume of each molecule of the gas.

III) The attractive forces between molecules of the gas

- (A) I, II and III (B) I and II only
(C) I and III only (D) II and III only

Hints: (d) Vander waal introduced pressure correction term and volume correction term in the ideal gas equation to account for the deviation of real gases from ideal behavior due to volume of gas molecules and intermolecular forces.

132. The statement that heat cannot spontaneously flow from a colder to a hotter body is a result of:

- (A) Henry's law
(B) The first law of thermodynamics
(C) The second law of thermodynamics
(D) The third law of thermodynamics.

Hints: (d) is correct because it is direct statement of second law of thermodynamics

133. Rutherford's scattering experiment demonstrate:

- (A) The existence of X-rays.
(B) The existence of α -particles.
(C) The mass to charge ratio of electron.
(D) The nuclear model of the atom.

Hints: (d) Rutherford's α - particles scattering experiment demonstrated the presence of nucleus in an atom.

134. What is the relationship between the intensity I and the amplitude a of a wave?

- (A) $I \propto a$
(B) $I \propto a^2$
(C) $I \propto 1/a$
(D) $I \propto 1/a^2$

Hints: (d) The relationship between the intensity " I " and the amplitude " a " of a wave we know that

$$I \propto a^2 \quad I = \text{constant} a^2, \quad \frac{1}{a^2} = \text{constant}$$

135. Which is a statement of the principle of conservation of momentum?

- (a) Momentum is the product of mass and velocity.
(b) Momentum is conserved only in elastic collisions
(c) Momentum is conserved by all bodies in a collision
(d) Momentum is conserved providing no external forces act.

Hints: (c) momentum is conserved by all bodies in a collision.

136. A projectile is launched at 45° to the horizontal with initial kinetic energy E . Assuming air resistance to be negligible, what will be the kinetic energy of the projectile when it reaches its highest point?

- (A) $0.50 E$ (B) $0.71 E$ (C) $0.87 E$
(D) E

Hints: we know that

$$K.E = \frac{1}{2} m v^2 = \frac{1}{2} m (v \cos \theta)^2$$
$$\frac{1}{2} m v^2 (\cos \theta)^2 = \frac{1}{2} m v^2 (\cos 45^\circ)^2$$
$$E = E (\cos 45^\circ)^2$$

137. Coelenterates have hydrostatic skeleton except:

- (A) Coral (B) Sea anemone
(C) Hydra (D) jelly fish

Hints: In all coelenterates the



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Hints: vernalization is the process during which seed is exposed to low temperature usually at 4°C.

184. The response of a plant related to the length of the day and night is called:

(A) Photo-receptor (B) Photo-taxis
(C) Photo-tropism (D) Photo-Periodism

Hints: Photo-Periodism is response of plant to the changes in the relative length of day and night.

185. Which of the following polymers contain nitrogen?

(A) PVC (B) Terylene
(C) Nylon (D) Teflon

Hints: (c) is correct because Nylon formula $-(NH-(CH_2)_6-NH-CO-(CH_2)_4-CO)_n-$

186. Which one of the following does not exist?

(A) HBO₂
(B) HFO₂
(C) H₃PO₃
(D) HBrO₂

Hints: (b) Fluorine can't form oxyacids as it is unable to show positive oxidation state.

187. Select the strongest acid the Pka values are given:

(A) HI, Pka = -10
(B) HCN, Pka = +9.4
(C) H₂SO₄, Pka = +1.8
(D) HNO₃, Pka = -3.0

Hints: (a) Lower the pKa - value for an acid, higher is the Ka - value and hence stronger is the acid.

188. An electron in a hydrogen atom makes a transition from an energy level with energy E₁, to

one with energy E₂ and simultaneously emits a photon. The wavelength of the emitted photon is:

(a) $\frac{hc}{(E_1 - E_2)}$
(b) $\frac{h}{(E_1 - E_2)}$
(c) $\frac{h}{c} (E_1 - E_2)$

(d) $(E_1 - E_2) / hc$

Hints: (a) $E = \frac{hc}{\lambda}$, $\lambda = \frac{hc}{E}$

189. The electric field between the plates of an isolated air-spaced parallel-plate capacitor is E. What is the field between the plates after immersing the capacitor in a liquid of relative permittivity 10?

(A) $\sqrt{10}E$
(B) $E/\sqrt{10}$
(C) 10E
(D) $E/10$

Hints: (d) $E = \frac{1}{4\pi\epsilon_0\epsilon_r} \frac{q}{r^2} = \frac{E}{\epsilon_r} = \frac{E}{10}$

190. He was arrested and charged _____ murder.

(A) with (B) into (C) over (D) about

191. Providing heat to the following reaction causes it shift to the right
 $Co_2(g) + 2H_2O(g)$

$CH_4(g) + 2O_2(g)$ The reaction can therefore be described as:

(A) Spontaneous (B) Adiabatic
(C) Endothermic (D) Exothermic

Hints: (c) Heating favors an endothermic reaction.

192. The major sources responsible

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42. Select an ionic complex of the following

- (a) $[\text{Ag}(\text{NH}_3)_2]\text{Cl}$
- (b) $\text{Ca}_2[\text{Fe}(\text{CN})_6]$
- (c) $[\text{Cu}(\text{NH}_3)_4](\text{H}_2\text{O})\text{Br}_2$
- (d) $[\text{Cr}(\text{NH}_3)_4]\text{Cl}_2$

Hints: $[\text{Cr}(\text{NH}_3)_4]\text{Cl}_3$ is an ionic complex which is ionized into $[\text{Cr}(\text{NH}_3)_4]^{+3}$ and 3Cl^- ions

43. HCl and not HNO_3 is used to prepare H_2S gas from FeS:

- (a) HNO_3 is less reactive than HCl
- (b) HNO_3 renders the FeS passive
- (c) HNO_3 oxidizes H_2S to sulphur
- (d) HNO_3 is expensive than HCl

Hints: HNO_3 is not used to prepare H_2S gas from FeS because HNO_3 is a strong oxidizing agent which oxidizes H_2S to sulphur.

44. The period of $\tan x$ is:

- (a) 2π
- (b) -2π
- (c) π
- (d) $-\pi$

Hints: The period of $\tan x$ is π so (c) is correct

45. $\tan 2\theta =$

- (a) $\frac{2 \tan \theta}{1 - \tan^2 \theta}$
- (b) $\frac{1 - \tan^2 \theta}{2 \tan \theta}$
- (c) $\frac{2 \tan \theta}{1 + \tan^2 \theta}$
- (d) $\frac{1 + \tan^2 \theta}{2 \tan \theta}$

Hints: $\tan 2\theta = \tan(\theta + \theta) = \frac{\tan \theta + \tan \theta}{1 - \tan \theta \tan \theta} = \frac{2 \tan \theta}{1 - \tan^2 \theta}$

46. Distance of point of (4, -3) from the line

$$2x - 5y + 3 = 0$$

- (a) $4/5$
- (b) $26/5$

- (c) $\frac{4}{\sqrt{7}}$
- (d) $\frac{26}{\sqrt{7}}$

Hints: Distance of a point p(1,3) from the line

$$2x - 5y + 3 = 0 \text{ is } \frac{|2(1) - 5(3) + 3|}{\sqrt{(2)^2 + (-5)^2}} = \frac{10}{\sqrt{29}}$$

47. Two Progressive waves of frequency 300. Hz are superimposed to produce a stationary wave in which adjacent nodes are 1.5 m apart. What is the speed of the progressive waves?

- (a) 100ms^{-1}
- (b) 200ms^{-1}
- (c) 450ms^{-1}
- (d) 300ms^{-1}

Hints: distance between adjacent nodes

$$\lambda/2, \lambda/2 = 1.5, \lambda = 3.0\text{m}$$

$$v = f\lambda = 300 \times 3.0 = 900\text{m/s}$$

48. The ratio of strain to stress is:

- (a) Elastic modulus
- (b) Bulk modulus
- (c) (Elastic modulus) $^{-1}$
- (d) Young modulus

49. The unit of work the joule may be defined as the work done when the point of application of a force of 1 newton is moved a distance of 1 meter in the direction of the force Express the joule. In terms of the base units of mass, length and time the kg, m and s.

- (a) kg m s^{-2}
- (b) $\text{kg m}^2 \text{s}^{-2}$
- (c) $\text{kg m}^2 \text{s}^{-1}$
- (d) kg s^{-2}

Hints: (b) $J = \text{Nm} = \text{kg} \frac{\text{m}}{\text{s}^2} \text{m} = \text{kgm}^2\text{s}^{-2}$



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108. In Young's double slit experiment the slits are 0.500 mm apart and placed at a distance of 1.50 m from a screen. When light of wavelength 600 nm passes through, the fringe spacing is:

- (a) 2.0×10^{-7} mm
- (b) 1.8×10^{-6} mm
- (c) 0.18 mm
- (d) 1.8 mm

$$\gamma = \frac{\lambda D}{d} = \frac{600 \times 10^{-9} \times 1.5}{.5 \times 10^{-3}} = 1800 \times 10^3 \times 10^{-9} \text{ m} = 1.8 \text{ mm}$$

109. Which one of the following is not characteristic of stationary waves?

- (a) Energy of the stationary waves travels outwards
- (b) Wavelength is twice the distance between the adjacent nodes.
- (c) Amplitude is not the same
- (d) Phase is the same between two adjacent nodes.

Hints: (a) stationary waves do not transmit energy.

110. In Pakistan, the more electricity you use, _____ you bill will be:

- (a) The more high
- (b) The more highly
- (c) The highest
- (d) The higher

111. Which formula is of 2-methylpentane?

- (a) C_5H_{12}
- (b) C_5H_{10}
- (c) C_6H_{10}
- (d) C_5H_{14}

Hints: The formula of 2-Methylpentane is C_6H_{14}

112. Which halogen does not appreciably react with methane in free radical substitution reaction?

- (a) Fluorine
- (b) Chlorine
- (c) Iodine
- (d) Bromine

Hints: Iodine reacts with methane reversibly. To cause forward reaction, strong oxidizing agent like HNO_3 is used to remove the resulting strong reducing agent HI and stop the reverse reaction.

113. Octane number is associated with:

- (a) Gasoline
- (b) Kerosene oil
- (c) Diesel oil
- (d) Lubricating oil

Hints: Octane number shows the % volume of 180-octane in gasoline. Higher the octane number, better is the quality of gasoline and vice versa.

114. $\int \cos ec^2 kx dx =$

- (a) $-\frac{\cos kx}{k} + c$
- (b) $-\frac{\sin kx}{k} + c$
- (c) $-\frac{\cot kx}{k} + c$
- (d) $-\frac{\tan kx}{k} + c$

Hints: $\int \cos ec^2 kx dx = -\frac{\cot kx}{k} + c$

115. $\int \cosh kx dx =$

- (a) $\frac{\sin kx}{k} + c$
- (b) $\frac{\cosh kx}{k} + c$
- (c) $\frac{\tanh kx}{k} + c$
- (d) $\frac{\text{sech } kx}{k} + c$

Hints: $\int \cosh kx dx = \frac{\sinh kx}{k} + c$

116. The radius of the circle passing through the point (6,2) and two of whose diameters are $x + y = 6$ and $x + 2y = 4$ is:

- (a) 4
- (b) 5
- (c) 20
- (d) $\sqrt{20}$



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- (c) 90°
(d) 270°

Hints: (a) $\vec{\phi} = \vec{B} \cdot \vec{A} = BA \cos \theta = BA \cos \theta^\circ = BA$

158. Conversion of alternating current to direct current is called:

- (a) amplification (b) Rectification
(c) Both a. & B (d) None of them

Hints: (b) diode acts as a rectifier

159. The minimum energy necessary to remove an electron from the surface of the emitter material is called:

- (a) Thershold frequency
(b) Stopping potential
(c) Stopping energy
(d) Work function

Hints: (d) work function = $foh - (fo = \text{threshold frequency})$

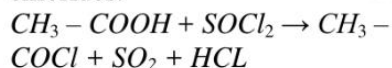
160. 'Get hold or oneself' implies:

- (a) To feel exheusted
(b) To start running
(c) To chach a chief
(d) To become calm

161. Sodium reacts with water more vigorously than Li due to the reason that:

- (a) $AlCl_2$
(b) $HCl / ZnCl_2$
(c) $SOCl_2$
(d) HCl

Hints: Carboxylic acids can be converted into acid halides by reactin with phosphorus halides or thinly chlorides.



162. Which is monosaccharide?

- (a) It is more electropositive

- (b) It is more electronegative
(c) It has higher atomic mass
(d) It is a metal

Hints: The reactivity of metals increases down tehe group due to increase in then electro positivity. Na metal s more reactive than Li due to more electropositive character of Na.

163. Which is monosaccharide?

- (a) Maltose (b) Cellulose
(c) Sucrose (d) Fructose

Hints: Carbohydrates which can't be decomposed by hydrolysis to give simple carbohydrates.

164. Derivative of e^{-3x} =

- (a) $-3e^{-3x}$
(b) e^{-3x}
(c) $-e^{-3x}$
(d) $3e^{-3x}$

Hints: $\frac{d}{dx} e^{-3x} = e^{-3x} \frac{d}{dx} (-3x) = -3e^{-3x}$

165. If $y = (3x^2 - 6x + 4)^{-1}$, then =

- (a) $\frac{6(x-1)}{(3x^2-6x+4)^2}$
(b) $\frac{-6(x-)}{(3x^2-6x-4)}$
(c) $\frac{-6(x-)}{(3x^2-6x-4)^2}$
(d) $\frac{-6(x-)}{(3x^2-6x+4)}$

Hints:

$$\text{If } y = (3x^2 - 6x + 4)^{-1}, \text{ the } \frac{dy}{dx} = \frac{-6(x-)}{(3x^2-6x+4)^2}$$

166. A vector is called zero vector if:

- (a) It has magnitude and no arbitrary direction.
(b) It has no magnitude but has arbitrary direction.
(c) It has only magnitude and



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direction

(d) It has direction only.

Hints: (b) is correct

167. The ionization energy for a particular atom is 30eV. How much energy is required to move an electron from its ground state to an excited energy level of $E = -18\text{eV}$?

- (a) 12eV
- (b) 18eV
- (c) 30eV
- (d) 48eV

168. These cells of 2 volts each are connected in series. The net voltage due to combination of cell is:

- (a) 5 volts
- (b) 1/3 volts
- (c) 6 volts
- (d) 1/5 volts

Hints: (c) 6 volt ($v=2v+2v+2v=6\text{volt}$)

169. The region of pn-junction diode where p-type material annihilates n-type side electrons and n-type side electron annihilate p-type side holes is called:

- (a) depletion region
- (b) Potential barrier
- (c) Pn-junction
- (d) All of them

Hints: (d) is correct

170. 'No Wonder' implies:

- (a) Not surprising
- (b) Traffic mishap
- (c) Nothing weird
- (d) Seeing strange

171. Coal-tar is considered as the main source of:

- (a) Aliphatic compounds
- (b) Aromatic compounds
- (c) Heterocyclic compounds
- (d) All of the above

Hints: Coal-tar is considered to be a

mixture of different aromatic hydrocarbons.

172. Boric acid cannot be used:

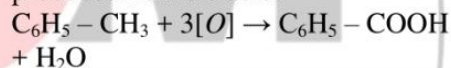
- (a) as antiseptic in medicine
- (b) For enamels and glazes
- (c) In soda bottle
- (d) For washing eyes

Hints: Boric acid can be used for washing eyes, as antiseptic in medicines, for enamels and glazes in pottery but can't be used in soda bottles.

173. When toluene is oxidized the product form is:

- (a) Benzyl alcohol
- (b) Phenol
- (c) Benz aldehyde
- (d) Benzoic acid

Hints: The oxidation of toluene with acidified KMnO_4 or $\text{K}_2\text{Cr}_2\text{O}_7$ produces Benzoic acid.



174. Let a and b be the position vectors of the point A and B. If C divides AB internally in the ratio p : q then the position vector c of C is given by:

(a) $C = \frac{qb+pa}{q+p}$

(b) $C = \frac{qb+pa}{q-p}$

(c) $C = \frac{qb-pa}{q+p}$

(d) $C = \frac{ap-qb}{q+p}$

Hints: (a)

175. If a. (b + c) = a.b + c... then

(a) Scalar product is distributive over addition.

(b) Scalar product is distributive over

Multiplication.



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(c) Nylone-6, 8 (d) Terylene

Hints: Adipic acid reacts with hexamethylenediamine to form $H_2N - (CH_2)_6 - NH_2 + HOO - (CH_2)_4 - COOH \rightarrow [-HN - (CH_2)_6 - NH - CO - (CH_2)_4 - CO-]$

192. The C - C bond length in benzene is:

- (a) Greater than the C - C bond length in ethane.
- (b) Shorter than the C - C bond length in ethane.
- (c) Shorter than the C - C bond length in ethylene.
- (d) Shorter than the C - C bond length in acetylene.

Hints: The carbon-carbon bond length in benzene is 1.39 \AA which is shorter than carbon-carbon single bond (1.54 \AA)

193. Denatured spirit is mainly used:

- (a) As a good fuel
- (b) For drinking purposes
- (c) For lubricating machines.
- (d) As solvent in preparing varnishes.

194. If m_1 and m_2 are the slopes of two lines l_1 and l_2 respectively then the angle from l_1 to l_2 is given by:

- (a) $\tan \theta = \frac{m_2 + m_1}{1 - m_2 m_1}$
- (b) $\cot \theta = \frac{m_2 - m_1}{1 + m_2 m_1}$
- (c) $\tan \theta = \frac{1 + m_2 m_1}{m_2 - m_1}$
- (d) $\cot \theta = \frac{1 + m_2 m_1}{m_2 + m_1}$

Hints: (c)

195. The coordinates of the midpoint of the line segment whose end points are:

$P_1(-10, 4)$, $P_2(7, -5)$ =

(a) $(4, \frac{-1}{2})$

(b) $(\frac{-3}{2}, \frac{-1}{2})$

(c) $(\frac{3}{2}, \frac{1}{2})$

(d) None

Hints: $(\frac{-10+7}{2}, \frac{4-5}{2}) = (\frac{-3}{2}, \frac{-1}{2})$

196. If (x, y) are the co-ordinates of a point 'P' then the 1st component of the order pair is called:

- (a) Abscissa (b) Y-coordinate
- (c) Ordinate (d) XY-coordinate

Hints: (x, y) : then x is called abscissa so (a) is correct.

197. If the power produced by a circuit is tripped the energy used by the circuit in 1 second will be:

- (a) Multiplied by 3 (b) Divided by 3
- (c) multiplied by 9 (d) Divided by 9

Hints: (a) $P = \frac{E}{t} \Rightarrow 3P = \frac{3E}{t} = 3E$

198. Which property is constant for a body in free fall?

- (a) Acceleration (b) Displacement
- (c) Velocity (d) Speed.

Hints: (a) Acceleration in free fall = g which is constant.

199. At what angle should a projectile be fired in order for its range to be at maximum?

- (a) 30°
- (b) 45°
- (c) 90°
- (d) 60°

Hints: (b)

$R_{\max} = \frac{V^2 \sin 2\theta}{g} = \frac{V^2 \sin(2 \times 45^\circ)}{g} = \frac{V^2}{g}$

200. Select the correct sentence:

- (a) The best person certainly she is



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9. $\sin 20^\circ \cos 70^\circ + \cos 20^\circ \sin 70^\circ =$
A) 1 B) -1 C) $\frac{1}{\sqrt{3}}$ D) $\frac{2}{\sqrt{3}}$
-
10. Isopropyl alcohol on oxidation with sodium dichromate in presence of sulphuric acid gives:
A) Acetaldehyde B) Ethanoic acid
C) Acetone D) Propanoic acid
-
11. ALL BYONESELF' implies:
A) keeping aloof not joining anybody 'scompany
B) in company and all those present joininghands
C) passing one's life singly like a chronicbachelor
D) completely alone with no help fromsomeone else
-
12. For any natural number n,
 $1 + 3 + 5 + \dots + (2n - 1) =$
A) $\frac{n(n+1)}{2}$ B) $\frac{n^2(n+1)^2}{4}$ C) $\frac{n(n+1)(n+2)}{2}$ D) n^2
-
13. The de-Broglie wavelength of a rifle bullet of mass 0.02kg which is moving at a speed of 300 ms⁻¹ is (where $h = 6.63 \times 10^{-34}$ J s):
A) 7.3×10^{-34} m
B) 1.1×10^{-34} m
C) 1.8×10^{-34} m
D) 9.9×10^{-34} m
Hints:
-
14. Select proper IUPAC name of the following compound:
 $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_3$
-
- C=C
 $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_3$
A) 2-methyl-3-ethyl-2-butene
B) 3-ethyl-2-methyl-2-butene
C) 2, 3-Dimethyl-2-pentene
D) 2, isopropyl butane
-
15. The electric field between the plates of an isolated air-spaced parallel-plate capacitor is E. What Is the field between the plates after Immersing the capacitor in a liquid of relative permittivity 10?
A) 10E B) E/10 C) $\sqrt{10E}$ D) $E/\sqrt{10}$
-
16. If C and D are two matrices, then (C + D)^t
A) C^t + D^t B) C^tD^t C) D^t C^t D) (CD)^t
Hints:
-
17. Which one of the following best represents the Haber process for the production of ammonia?
A) $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$
B) $\text{NH}_4^+(\text{aq}) + \text{OH}^- \rightleftharpoons \text{NH}_3(\text{aq}) + \text{H}_2\text{O}(\text{l})$
C) $\text{Mg}_3\text{N}_2 + 6\text{H}_2\text{O} \rightleftharpoons 3\text{Mg}(\text{aq}) + 2\text{NH}_3(\text{g})$
D) $\text{H}_3\text{N} + \text{NH}_2\text{O} \rightleftharpoons \text{NH}_2 + 1\text{OH} + \text{NH}_3(\text{g})$
-
18. What is its mean angular speed?
A) 1.4×10^{-4} rad s⁻¹ B) 1.7×10^{-3} rad s⁻¹
C) 5.2×10^{-3} rad s⁻¹ D) 3.0×10^{-1} rad s
-
19. If a, b, c are sides of a triangle and $s = \frac{a+b+c}{2}$ then area of the triangle



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is:

- a) $\frac{2}{\sqrt{2s(s-a)(s-b)(s-c)}}$
b) $\sqrt{s(s+a)(s+b)(s+c)}$
c) $\frac{2}{\sqrt{2s(s-a)(s-b)(s-c)}}$
d) $\sqrt{s(s+a)(s+b)(s+c)}$

Hints:

$$\text{Area of triangle} = \frac{2}{\sqrt{2s(s-a)(s-b)(s-c)}}$$

20.

The oxidation number of Nitrogen in Nitrite ion is:
A) +1 B) +2 C) +3 D) +4

21.

Traffic constables direct traffic.
Select the correct passive voice:
A) Directed by traffic constables is traffic.
B) By traffic constables is directed traffic.
C) Traffic by traffic constables is directed.
D) Traffic is directed by traffic constables.

22.

In the Hydrogen spectrum, Balmer series lies in the:
A) ultra-violet region B) visible region
C) infra-red region D) X-rays region

23.

If $a, b, c \in \mathbb{R}$ $a > b, b > c > a > c$, then this property is called:
A) Multiplicative property of inequality
B) Additive property of inequality

C) Transitive property of inequality
D) Trichotomy property of inequality

24.

$\text{CH}_3\text{CH}=\text{CHCH}_3 + \text{MgX} \rightarrow \text{CH}_3\text{CH}(\text{MgX})\text{CH}_2\text{CH}_3$
In the above reaction Compound Y will be an:
A) Alkane B) Alkene
C) Alcohol D) Alkyl halide

25.

The phase change of 180° is equivalent to a path difference of:
A) $\lambda/2$ B) λ C) 2λ D) 3λ

26.

The domain of principal sine function is:
a) $[0, \frac{\pi}{2}]$
b) $[-\frac{\pi}{2}, \frac{\pi}{2}]$
c) $[0, \frac{3\pi}{2}]$
d) $[0, 2\pi]$
Hints:

27.

What will happen if a block of copper metal is dropped into a beaker containing a solution of 1M FeSO_4 ?
 $\text{Cu}^{2+} + 2e^- \rightleftharpoons \text{Cu} \quad 0.34 \text{ V}$
 $\text{Fe}^{2+} + 2e^- \rightleftharpoons \text{Fe} \quad -0.44 \text{ V}$
A) The copper will dissolve with no other change
B) The copper will dissolve and Fe will be precipitated out
C) The copper will dissolve with the evolution of H_2 gas
D) No reaction will occur

28.

What are the base SI units of force?
A) Kg m s^0 B) Kg m s^1



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40.

Which type of hybridization carbon atom can undergo in the formation of ethyne molecule?

- A) Sp B) Sp² C) Sp³ D) Dsp²

41.

Select the correct sentence:

- A) Last night we watched a barbaric movie.
B) Last night we watched a turmeric movie.
C) Last night we watched a agnostic movie.
D) Last night we watched a fantastic movie

42.

Which statement is not valid?

- A) Current is the speed of the charged particles that carry it
B) Electromotive force (e.m.f.) is the energy converted to electrical energy from other forms, per unit charge
C) The potential difference (p.d.) between two points is the work done in moving unit charge from one point to the other
D) The resistance between two points is the p.d. between the two points, per unit current

43.

${}^n P_r$

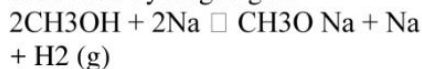
- A) $\frac{n(n-1)!}{n-r}$
B) $\frac{n(n-1)!}{n+r}$
C) $\frac{n!}{(n-r)!}$
D) $\frac{n!(n-r)!}{n-r}$

Hints = ${}^n P_r = \frac{n!}{(n-r)!}$

44.

Methanol reacts with sodium. The product formed is sodium meth

oxide and hydrogen gas.



In this reaction methanol acts as:

- A) Weak base B) Weak acid
C) Strong base D) Weak oxidizing agent

45. In the direction indicated by an electric field line:

- A) The potential must decrease
B) The electric field strength must increase
C) The electric field strength must decrease
D) The potential must increase

46. In the form of partial fractions the rational function

$\frac{x^2}{(x-1)^3(x+1)}$ can be written as:

- a) $\frac{A}{x+1} + \frac{B}{x-1} + \frac{C}{x-1} + \frac{D}{x-1}$
b) $\frac{A}{(x-1)} + \frac{Bx+C}{x+1}$
c) $\frac{A}{(x-1)} + \frac{B}{x-1} + \frac{C}{(x-1)^2} + \frac{Dx+E}{x+1}$
d) $\frac{A}{(x-1)} + \frac{B}{x-1} + \frac{C}{(x-1)^2} + \frac{D}{x+1}$

Hints: $\frac{x^2}{3} = \frac{A}{x-1} + \frac{B}{(x+1)^2} + \frac{C}{(x-1)} + \frac{D}{x+1}$
(x-1) (x+1)

47.



Considering the above reaction which one is the true product?

- A) CH₃COO NH₄ B) CH₃ CO NH₂
C) H₂N COO NH₄ D) CH₃Cl

48.

In a photoemission experiment, the wavelength of the light incident on the target material is increased. What is the effect of this change of wavelength on the kinetic energy of the photoelectrons produced?



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each force is F. the angle between the forces must be:

- A) 30° B) 60°
C) 120° D) 45°

89.

$$\sin\left(a + \frac{\pi}{2}\right) =$$

- A) $\sin a$ B) $-\sin a$
C) $\cos a$ D) $-\cos a$

Hints: $\sin\left(a + \frac{\pi}{2}\right) = \sin a \cos \frac{\pi}{2} + \cos a \sin \frac{\pi}{2}$

90.

Propene is unsymmetric molecule the addition of HI will result in the formation of:

- A) $\text{H}_3\text{C} - \text{CH} - \text{CH}_3$ B) $\text{CH}_3\text{CH}_2\text{I}$
C) $\text{CH}_3\text{CHCH}_3 + \text{CH}_3\text{CH}_2\text{I}$
D) $\text{CH}_2 - \text{CH} - \text{CH}_3 + \text{H}_2$

91.

'PRECISE' is a short summary of the essential ideas of:

- A) A mixture of passages B) The underlying theme
C) The overview practice D) A longer composition

92.

An electron in a hydrogen atom makes a transition from an energy level with energy E_1 , to one with energy E_2 and simultaneously emits a photon. The wavelength of the emitted photon

- A) $h/E_1, E_2$ B) $h\omega/E_2, E_2$
A) $h/c (E_1 - E_2)$ D) $(E_1 - E_2)/hc$

93.

For a geometric series $a_1 + a_2 + a_3 + \dots + a_n$ with common ratio $r \neq 1$, $S_n =$

- a) $\frac{r^n - 1}{r - 1}$ b) $\frac{r - 1}{r^n - 1}$ c) $\frac{a_1(r^n - 1)}{r - 1}$ d) $\frac{a_1(r^n - 1)}{r + 1}$

Hints: $a_1 + a_2 + \dots + a_n, S_n = \frac{a_1(r^n - 1)}{r - 1}$

94.

Styrene is polymerized at high temperature of about 600°C in the presence of a catalyst:

- A) Iron oxide B) Platinum gauze
C) palladium D) Nickel

95.

Which one of the following has the largest energy content?

- A) 102 photons of wavelength 1 pm (y-ray)
B) 105 photons of wavelength 2 pm (y-ray)
C) 106 photons of wavelength 5 μm (infra-red rays)
D) 108 photons of wavelength 600 nm (yellow light)

96.

The roots of the equation $25x^2 - 30x + 9 = 0$ are:

- A) imaginary B) Rational and equal
C) Rational and unequal D) Irrational and equal

97.

Which X — H bond angle is greatest in the following compounds? Where X=C,N,O,S

- A) CH_4 B) NH_3
C) H_2O D) H_2S

98.

What is represented by the gradient of a graph of force (vertical axis) against extension (horizontal axis)?

- A) Elastic limit B) Spring constant
C) Stress D) Young modulus

99.

If $\square(x) = \frac{x}{x+1}$ then $[\square(2)]^{-1} =$

- A) $\frac{1}{2}$ B) $\frac{-2}{3}$ C) $\frac{2}{3}$ D) $\frac{3}{2}$



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promoted by them

122.

Particles giving rise to dense, straight and continuous tracks in a cloud chamber due to ionization produced by them are:

- A) Beta particles B) Alpha particles
C) Gamma rays D) Photo electrons

123.

The coordinates of the midpoint of the line segment whose end points are P1(-10,4), P2(7, -5) are:

- a) (4, -1/2)
b) (2/3, 2)
c) (3/2, 1/2)
d) (-3/2, -1/2)

124.

The electronic configuration of gallium, atomic number 31, is:

- A) [Ar] 4S2 3d8 4P3 B) [Kr] 4S2 3d10 4S1
C) [Ar] 4S2 3d10 4P1 D) [Ar] 3S2 3d10 4P1

125.

A ball is dropped from the roof of a very tall building. What is its velocity after falling for 5.00 seconds?

- A) 1.96 m/s B) 9.80 m/s
C) 49.0 m/s D) 98.0 m/s

126.

The inverse relation of $y = \sin x$ is defined by the equation:

- A) $Y = \sin^{-1} x$ B) $X = \sin^{-1} y$
C) $Y = \cos x$ D) $X = \cos^{-1} y$

127.

All of the following tests are used to identify aldehyde except:

- A) Tolle's test B) Fehling test
C) Benedict test D) Baeyer's test

128.

wire of resistance 4Ω is bent into a circle. The resistance between the ends of a diameter of the circle is:

- A) 1Ω B) $\frac{1}{4}\Omega$ C) $\frac{1}{16}\Omega$ D) 4Ω

129.

Parallel sides of a trapezium are x and y , the distance between these two sides is z . Area of the trapezium =

- A) $(x + y) \frac{z}{2}$ B) $(x - y)z$ C) $2z(x + y)$
d) $2z/x + y$

130.

Which of the following is the strongest oxyacid?

- A) HClO4 B) HClO3
C) HClO2 D) HClO

131.

Leagerly-look forward... seeing her again.

- A) At B) To
C) On D) by

132.

Nuclear forces are inside the nucleus. These forces are:

- A) Long range B) Short range
C) Medium range D) Not range dependent

133.

If $\phi(x) = x^2 + x - 1$, then the images of 2, 3, are:

- A) 7, 13, 31 B) 5, 12, 26
C) 5, 11, 29 D) 3, 8, 24

134.

Arrange electromagnetic spectrum in terms of wavelength in correct order:

- A) i.f.>u.v.> visible> microwave> radio frequency
B) u.v.> visible> i.r.> microwave> radio frequency
C) isible > I.r.> b.v.> microwave>



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impressed

D) The lecturer was impressed by your essay

172.

A car with a mass of 800 kg is stalled on a road. A truck with a mass of 1200 kg comes around the curve at 20 m/s and hits the car. The two vehicles remain locked together after the collision. What is their combined velocity after the impact?

- A) 3 ms⁻¹ B) 6 ms⁻¹
C) 12 ms⁻¹ D) 24 ms⁻¹

173.

$a_1x + b_1y + c_1 = 0$, $a_2x + b_2y + c_2 = 0$ and $a_3x + b_3y + c_3 = 0$ are three non-parallel lines.

These lines are concurrent if

- $\begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$
A) -1 B) 1
C) 0 D) -2

174.

Which of the following would you consider to be comparatively more reactive?

- A) C₂H₆ B) C₂H₄
C) C₂H₂ D) C₃H₈

175.

Current in an ionized gas sample depends on:

- A) Cations only B) Anions only
C) Free electrons only
D) Cations, anions, and free electrons

176.

If $a \cdot (b + c) = a \cdot b + a \cdot c$, then:

- A) Vector product is distributive over multiplication
B) Scalar product is distributive over

multiplication

C) Vector product is associative over addition

D) Scalar product is distributive over addition

177.

18.0 grams of glucose, C₆H₁₂O₆ was dissolved in 70.0 grams of water. The relative lowering of vapour pressure would be:

- A) 4.1 B) $\frac{1}{41}$
C) 4.0 D) $\frac{1}{40}$

178.

Monochromatic light passes through two parallel slits in a screen and falls on a piece of film. The pattern produced is an example of:

- A) Interference and reflection
B) Interference and diffraction
C) Refraction and diffraction
D) Diffraction and polarization

179.

If $x^2 + y^2 + 2gx + 2fy + c = 0$ is the general form of the equation of circle, then radius =

- a) $\sqrt{g^2 + f^2 + c}$
b) $\sqrt{g^2 + f^2 + c}$
c) $\sqrt{g^2 + f^2 + c}$
d) $\sqrt{g^2 + f^2 + c}$

180.

Which is not a raw material for the production of cement?

- A) CoCO₃ B) CaCO₃
C) CaSO₄ · 2H₂O D) Clay

181.

In grammatical context, 'ARTICLES' allude to:

- A) A, an and the B) For and since
C) Lexical verbs D) Word classes



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194.

Which one of the following does not form covalent crystals?

- A) Diamond B) Allcon
C) Graphite D) Water

195.

Two electrically neutral material are rubbed together. One acquires a net positive charge. The other must have:

- A) Lost electrons B) Gained electrons
C) Lost protons D) Gained protons

196.

If a and b are parallel vectors but opposite in direction and $\theta = 180^\circ$, then a . b =

- A) 1 B) -1
C) - ab D) ab

197.

Which gas occupies the largest volume at STP?

- A) 16g of CH₄ B) 32g of O₂
C) 28g of N₂ D) 4g of H₂

198.

A current of 20.0 A flows through a battery with an emf of 6.20 V. If the internal resistance of the battery is 0.010, what is the terminal voltage?

- A) 1.24V B) 6.00V
C) 6.40V D) 31.0V

199.

If $|a| = 3$, $|b| = 4$ and $\theta = 60^\circ$, then a . b =

- a) $a\frac{1}{2}$ b) $\sqrt{\frac{3}{2}}$ c) 6 d) 2

200.

Which one is the oxidizing agent in the following reaction?

- A) Cu²⁺ B) Zn
C) Zn²⁺ D) Cu

Since 2016



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312 kcal/mole

Hints: combustion of hydrocarbon is exothermic process that is why OH is -ve and since combustion of methane provides 213 k cal / mol.

19. A zirconium nucleus is a β -emitter. The product nucleus is also a β -emitter. What is the final resulting nucleus of these two decays?

A) ${}_{100}\text{Sr}_{38}$ B) ${}_{100}\text{Mo}_{41}$ C) ${}_{98}\text{Zr}_{40}$ D) ${}_{102}\text{Zr}_{40}$

Hints: ${}_{40}\text{Zr}^{100} \xrightarrow{\beta} \xrightarrow{\beta} {}_{39}\text{S}^{100}$

20. Add some milk and sugar the tea.

A) To B) At C) In D) On

21. Rain water becomes acidic, when the pH-value of rain water becomes.
A) Greater than 6 B) Greater than 6.5
C) Less than 5.6 D) Less than 5

Hints: normal water has a ph of 5.6 rain water has a ph lower than 5.6. this because acid rain contain Nitric acid and sulphuric acid formed by lighnering.

22. Dunking water should be odorless, tasteless and live from turbidity and its pH should range between:

A) 6.0 to 7.0 B) 7.0 to 8.5
C) 4.5 to 6.0 D) 8.5 to 9.0

23. A raring car accelerates uniformly through three gear changes with the following average speeds:

20 ms^{-1} for 2.0s; 40 ms^{-1} for 2.0 s and 60 ms^{-1} for 6.0 s What is the overall average speed of the car:

A) 12 ms^{-1} B) 13.3 ms^{-1}
C) 40 ms^{-1} D) 48 ms^{-1}

$$\langle s \rangle = \frac{s_1 + s_2 + s_3}{10} = \frac{40 + 80 + 360}{10}$$

$$\text{Hints: } \langle s \rangle = \frac{480}{10} = 48 \text{m/s}$$

24. Changes in gene frequencies in small population by chance is called:

A) Gene pool B) Genetic dolt
C) Gene mutation D) Gene flow

Hints: changes in gene frequencies in small population by chance is called droft.

25. $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$, $\Delta H = 46.1 \text{ kJ/mole}$ For the reaction above which statement is true about the equilibrium constant (Keg):

A) Keg Increases with increase in temperature
B) Keg decreases with Increase in temperature
C) Keg decreases with Increase in pressure
D) Keg increases with decrease in pressure

Hints: according to le-chattetia principle formation of ammonia is favored by high pressure and low temperature. This is because reaction proceeds from higher to lower volume and further the r x n is exothermic.

26. Which of the following lists contains scalar quantities only?

A) Mass, acceleration, temperature, kinetic energy
B) Mass, volume, electrical potential, kinetic energy
C) Acceleration, temperature, volume, electric charge



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83. If the momentum of a body decreases by 20% the percentage decrease in K.E will be:
A) 44% B) 36% C) 28% D) 20%
K.E $\frac{p^2}{2m}$, K.E $\frac{p^2}{2m} (0.8^2 - 1)$
Hints: $\frac{p^2}{2m} (0.36) = 36\%$
84. Which one of the following animals is filter feeder?
A) Teeth B) Sycon
C) Fresh water muscle D) Jelly fish
Hints: fresh water mussel is a filter feeder, filter feeders are those animals which filter the water and extract particles for eating digestion.
85. Which one is not a nitrogenous fertilizer?
A) Ammonium nitrate B) Triple phosphate
C) Urea D) Nitro phosphate
Hints: all the three fertilizer contain nitrogen triple phosphate has no nitrogen in its composition
86. The antimatter of electron is:
A) Photon B) positron
C) Positron D) Antineutrino
87. In chlorophyll-b, the porphyrine ring is attached to the:
A) Methyl group B) Carboxyl group
C) Aldehyde group D) Hydroxyl group
88. Used as the own indicator in acid medium?
A) $K_2Cr_2O_3$ B) Iodine
C) $KMnO_4$ D) H_2O_2
89. An organ pipe is open at both ends at its fundamental frequency. Neglecting any end effects, what wavelength is formed by this pipe in this mode of vibration, if the pipe is two meter long?
A) 2m B) 4m C) 6m D) 8m
Hints: $\lambda = 2l = 2(2) = 4m$
90. Fire destroyed the top floor of the building:
A) The top floor of the building got destroyed by fire
B) By fire was destroyed the top floor of the building.
C) Destroyed by fire was the top floor of the building.
D) The top floor of the building was destroyed by fire
91. Myoglobin is found in:
A) Bone B) Connective tissue
C) Muscles D) Cartilage
Hints: myoglobin is present in muscular cells. Myoglobin is an oxygen storing pigmented protein. Due to the presence of myoglobin the color of the fibre is red.
92. The atomic number of scandium is 21. What is its ground state electronic configuration?
A) $1s^2 2s^2 2p^6 3s^2 3p^3$
B) $1s^2 2s^2 2p^6 3s^2 3p^3 3d^1$
C) $1s^2 2s^2 2p^6 3s^2 3p^3 3d^2$
D) $1s^2 2s^2 2p^6 3s^2 3p^3 3d^1 4s^1$
Hints: the scandium is a transition element in which ground state electronic configuration will have one electron in 4s.
93. A body in equilibrium must not have:
A) Kinetic energy B) Velocity
C) Momentum D) Acceleration
94. The center of porphyrine ring of



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production of steel pig and last iron are manufactured in blast furnace.

156. A mass accelerates uniformly when the resultant force acting on it:

A) Is zero.
B) Is constant but not zero.
C) Increases uniformly with respect to time.
D) Is proportional to the displacement of the mass from a fixed point.

157. In which of the following the phenotypic and genotypic ratio is the same?

A) Co-dominance
B) Over dominance
C) Epitasis
D) Incomplete dominance

Hints: In case of incomplete dominance the phenotypic and genotypic ratio are the same, i.e. 1: 2: 1

158. The variable oxidation states of transition elements is attributed to the involvement of s as well as:

A) Unpaired *d* Electrons B) Unpaired *p* electrons
C) Unpaired *f* elections D) Paired up *d* electrons

159. A sample of carbon-12 has a mass of 3.0 g. which expression gives the number of atoms in the sample?

(NA is the symbol Ion the Avogadro constant).
A) 0.0030NA B) 0.25 NA
C) 3.0 NA D) 4.0 NA

Hints: 1 mole of C-12 = 12g
3 g of C-12 = x mole

$$N = \frac{m}{M} = \frac{3g}{12g/mol} = 0.25 \text{ mole}$$

For no of molecules we have

$$N = n \times N_A$$

N = no of particles, n = no of moles

$$N = 0.25 N_A$$

160. 'BREAK THE ICE' Implies:

A) Walk on ice-heet B) Swallow ice-cubes
C) Chisel an ice-block D) To make a beginning

161. A cell-wall that is composed of sugar and amino acids is called:

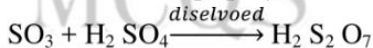
A) Murein B) Chitin C) Lignin D) Pectin

162. In contact process for the manufacture of sulphuric acid, sulphur trioxide is dissolved in sulphuric acid in form oleum.

Oleum molecular formula is:

A) H₂S₂O₃ B) H₂S₂O₅
C) H₂S₂O₆ D) H₂S₂O₇

Hints: Oleum or pyrosulphuric acid has a formula H₂ S₂ O₇



163. Which of the following lists contains three regions of the electromagnetic spectrum in order of increasing frequency?

A) Gamma rays, ultraviolet rays, radio waves.
B) Gamma rays, visible radiation, ultraviolet rays.
C) Microwaves, ultraviolet rays, X-rays.
D) Radio waves, visible radiation, infrared radiation

Hints: A plant or animal modified



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C) Robert Brawn D) Kohler
Hints: Nucleus was discovered by Robert brow in 1831. Waldyer discovered chromosomes in the cells in 1876

172.

Which of the following is not a nucleophile?

A) NH_3 B) HO^- C) $\text{HC}=\text{CH}$ D) Br^+

Hints: nucleophiles are negatively charged or neutral species.

NH_3 , OH^- , $\text{H}-\text{C}\equiv\text{C}-\text{H}$ are nucleophile while Br^+ is electrophiles.

173.

A sound wave of frequency 400 Hz is travelling in a gas at a speed of 320 ms^{-1} . What is the phase difference between two points 0.2 m apart in the direction of the travel?

- a) $\frac{\pi}{4}$ rad
b) $\frac{4\pi}{2}$ rad
c) $\frac{2\pi}{5}$ rad
d) $\frac{4\pi}{5}$ rad

174.

Stroma of chloroplasts carries the fixation of:

A) N_2 B) O_2 C) CO_2 D) NH_3

175.

Half cell reaction standard reduction potential, E o

$\text{Fe}^{2+} + 2\text{e}^- \rightarrow \text{Fe} \quad -0.41$

$\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu} \quad -0.41$

$\text{Ni}^{2+} + 2\text{e}^- \rightarrow \text{Ni} \quad -0.41$

$\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn} \quad -0.41$

Referring to the table above which metal could be used to prevent iron from erosion?

A) Cu only B) Zn only
C) Cu & Ni only D) Ni and Zn only

Hints: since the standard reduction

potential of zinc is lower than iron so it can be used as anode with iron cathode, iron will be coated with zinc and thus prevented from erosion the other elements Cu and Ni have higher standard reduction potential than iron.

176. Which of the following is the unit of pressure?

A) Kg m s^{-1} B) $\text{Kg m}^{-1} \text{s}^{-2}$
C) $\text{Kg m}^2 \text{s}^{-2}$ D) $\text{Kg m}^{-2} \text{s}^{-1}$

Hints: $P = \frac{F}{A}$
 $= \frac{\text{kg m/sec}^2}{\text{m}^2} = \text{kg m}^{-1} \text{s}^{-2}$

177. What will be the anti-codon of AUG?

A) TAC B) ATC C) UAC D) UTC

Hints: the anticodon of AUG is UAC, because in coding the base adenine make chemical bonding with cytosine.

178. Lipids are naturally occurring substances which are chemically:

A) Proteins B) Amino acids
C) Carbohydrates D) Esters

Lipids are chemically esters. They are derived from glycerol and fatty acids.

CH_2-OH

$\text{CH}-\text{OH} + 3 \text{R}-\text{CH}-\text{COOH}$

CH_2-OH

$\text{CH}_2-\text{O}-\text{CO}-\text{CH}_2 \text{R}$

$\text{CH}-\text{O}-\text{CO}-\text{CH}_2 \text{R}$

$\text{CH}-\text{O}-\text{CO}-\text{CH}_2 \text{R}$

179. Satellites revolve around the earth in a circular orbit. What is the relationship between the radius of their orbits and their speeds?

A) $V \propto r^2$ B) $V \propto r$



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C) $V_1 \propto 1/r$ D) $V \propto 1/r^2$

Hints: $v \propto \frac{1}{\sqrt{r}}$, $v \propto \frac{1}{r}$

180. 'DENOUNCE' means:

- A) To reject straight away B) To praise in a meeting
C) To condemn publicly D) To negotiate secretly

181. Potatoe plastids, which store starch, are known as:

- A) Paramylum B) Amyloplasts
C) Leucoplasts D) glycoplasts

182. A salt AB tonizes as $AB = A^+ > B^-$.

The solubility product for the salt AB is 4.0×10^{-4} . The molar solubility of the salt is:

- A) 4.0×10^{-4} M B) 2.0×10^{-2} M
C) 8.0×10^{-4} M D) 2.0×10^{-4} M

183. Of the following properties of a wave, the one that is independent of the others is its:

- A) Amplitude B) Wavelength
C) Speed D) Frequency

184. The primers used in polymerase chain reaction has a sequence of bases:

- A) 8 B) 12 C) 16 D) 20

Hints: the primer used in polymerase chain reaction has sequence of bases i.e. 20. During PCR heating denatures the DNA and new primers are added.

185. Which has the lowest temperature?

- A) Troposphere B) Stratosphere
C) Mesosphere D) Thermosphere

Hints: the temperature ranges of different layers of atmosphere given below:

Troposphere 60°C TO -56°C

Stratosphere -56°C TO -20°C

Mesosphere -20°C to 92°C

Thermosphere -92°C to 1200°C

186. The prefix 'tera' stands for:

- A) 10^4 B) 10^3 C) 10^2 D) 10^{12}

Hints: prefixes are given as

Deca 10^1 deci 10^{-1}

hecto 10^2 centi 10^{-2}

kilo 10^3 milli 10^{-3}

mega 10^6 micro 10^{-6}

giga 10^9 nano 10^{-9}

tera 10^{12} pico 10^{-12}

peta 10^{15} FEMTO 10^{-15}

exa 10^{18} ATTO 10^{-18}

187. The phenomenon that a seed fails to germinate in spite of providing all conditions necessary for germination, is called:

- A) Photoperiodism B) Vernalization
C) Dormancy D) phytochrome

Hints: when seed fails to germinate inspite of providing all necessary conditions, is called dormancy, it is mainly due to some endogenous inhibitors inside the seed.

188. Which one is least reactive towards a reaction with Na?

- A) $\text{CH}_3 - \text{OH}$ B) $\text{CH}_3 - \text{CH}_3$
C) $\text{CH}_3 - \text{O} - \text{CH}_3$ D) $\text{CH}_3 - \text{COOH}$

189. The force ' F ' on a charged particle ' q ' moving with velocity ' v ' parallel to magnetic field ' B ' is given by:

- A) $F = qvB$ B) $F = qB$
C) $F = 0$ D) $F = 0$

190. The police arrested him for dangerous driving.

Select the correct passive voice:

- A) He was arrested for dangerous



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driving by the police.

B) He was arrested by the police for dangerous driving.

C) For dangerous driving he was arrested by the police.

D) By the police was he arrested for dangerous driving.

191. Which one of the following is a sex-linked inheritance?

A) Baldness B) Albinism

C) Eye colour D) Myopia

Hints: albinism is a sex-linked inheritance, which occur when both of the genes for this character present in recessive form.

192. The element which has the smallest atomic radius is:

A) Fe B) Co

C) Ni D) Cu

Hints: Atomic radius decreases across a period and increases down the group. Atomic Fe, Cu, Ni and Cu, the Cu exist at right side of the fourth period. So atomic size decrease from Fe to Cu.

193. Which one of the following has negative temperature coefficient?

A) Copper B) Thermistor

C) Soft iron D) platinum

194. pulinus tissues are present at:

A) Leaf-tip B) Leaf-margin

C) Leaf-base D) Middle-vein

Hints: pulinus tissues are present in the leaf base. These are composed of parenchyma cells with large inter cellular spaces.

195. Which isomers have difference in both their physical and chemical

properties?

A) Chain isomers B) Position isomers

C) Functional group isomers D) Both 9A) and (B)

Hints: functional group gives characteristics property a to a compound, so isomers having different functional group will have different physical and chemical properties. Other isomers have same chemical but different physical properties.

196. When the light from two lamps falls on a screen, no interference pattern can be obtained. Why is this?

A) The lamps are not point sources

B) The lamps emit light of different amplitudes

C) The light from the lamps is not coherent

D) The light from the lamps is white.

197. When the light from two lamps falls on a screen, no interference pattern can be obtained. Why is this?

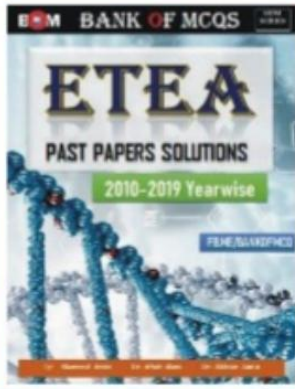
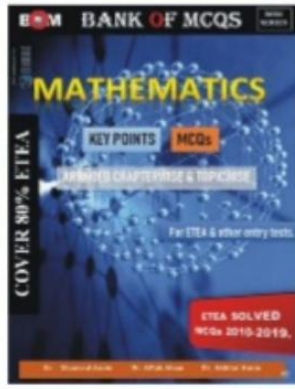
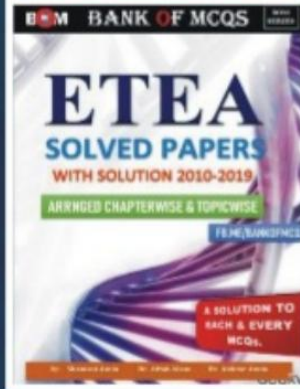
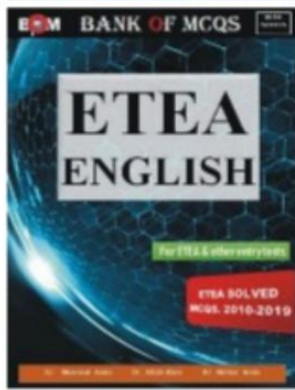
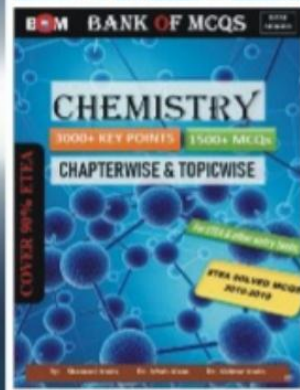
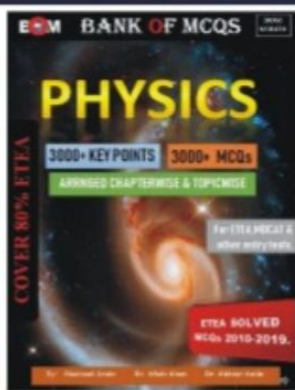
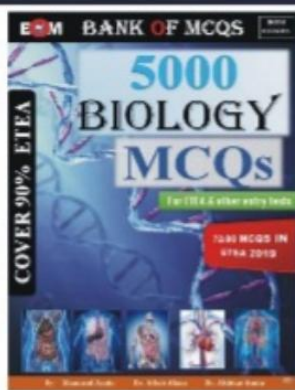
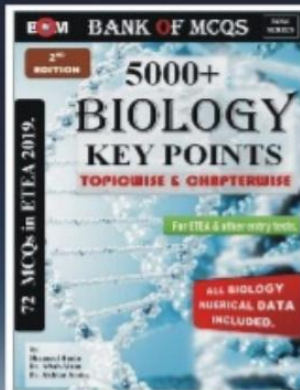
A) The lamps are not point sources

B) The lamps emit light of different amplitudes

C) The light from the lamps is not coherent

D) The light from the lamps is white.

Hints: the valve between left atrium and left ventricle is called bicuspid valve this valve has two flaps allowing the blood from the left auricle to the left ventricle and not in



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smallest frequency hence longest wavelength

Answer: (a)

34. Which one is considered as fool's gold?

(a) copper metal (b) iron pyrites FeS₂

(c) Copper glance Cu₂s (d) None
Hints: Fe S₂ when mixed have shine like gold.

Answer: (b)

35. $\tan^{-1}\left(\frac{5}{6}\right) + \tan^{-1}\left(\frac{1}{11}\right) = ?$

- a) $\frac{\pi}{3}$
- b) $\frac{\pi}{4}$
- c) $\frac{3\pi}{4}$
- d) $\frac{\pi}{2}$

Hints: $\tan^{-1}\frac{5}{6} + \frac{1}{11} = \tan^{-1}\left(\frac{61}{66}\right) =$

$\tan^{-1}(1) = \frac{\pi}{4}$

Answer: (b)

36. The wavelength of a wave traveling with speed v and having frequency f is

- a) $\lambda = f/v$
- b) $\lambda = f$
- c) $\lambda = v/f$
- d) $\lambda = f/v$

Answer: (c)

37. Common salt is purified by common ion effect by passing HCl Gas through saturated solution of NaCl in water. Why ordinary crystallization process from saturated solution is not recommended?

(a) common salt solubility remains constant with increase in temperature (b) common salt is less

soluble

(c) common salt solubility in water increases with increase in temperature.

(d) common salt solubility decreases with increase in temperature.

Hints: $\text{NaCl}_{(s)} \rightarrow \text{NaCl}_{(aq)} \rightarrow \text{Na}^+(aq) + \text{Cl}^-(aq) \Delta H = 0$

temperature has no effect on the solubility of NaCl

Answer: (a)

38. The line $y = mx + c$, becomes tangent to the circle $x^2 + y^2 = a^2$, If

- a) $C = a/m$
- b) $C = m/a$
- c) $C = +a\sqrt{1+m^2}$
- d) $C = +\sqrt{1-m^2}$

Hints: $y = mx + c$, $x^2 + y^2 = a^2$, putting value of y .

So, $c = a\sqrt{1+m^2}$

Answer: (c)

39. Radioactive activity is affected by:

(a) temperature (b) pressure

(c) humidity level (d) None

Hints: Radioactivity is spontaneous disintegration of high atomic number nuclei & is independent of temperature, pressure etc.

Answer: (d)

40. Do you go shopping often? Yes, _____

(a) I go shopping on Mondays

(b) I go shopping once a week

(c) I go shopping every days

(d) I go shopping at Super Market

Hints: the word "often" needs to be considered and focused. Often means occasionally.

Answer: (d)



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41. In an A.P if $a_1 = 4$, $a_{10} = 22$ Then $a_{15} = ?$
(a) 30 (b) 32 (c) 33 (d) 56
Hints: $a = 4, a + 9d = 22, 4 + 9d = 22, d = 2$ $a_{15} = a + 14d = 4 + 14(2) = 32$
Answer: (b)
42. Which one of the following is scalar quantity
(a) Mass (b) acceleration
(c) Momentum (d) electric intensity
Hints: Mass does not require direction for description
Answer: (a)
43. Out of the following which treatment is mostly used to kill the disease causing bacteria and other pathogens in water?
(a) Ozonation (b) UV irradiation
(c) chlorination (d) boiling
Hints: Chlorination is cheap process as compared to Ozonation.
Answer: (c)
44. Which of the following is correct
(a) sum of the cube roots of unity is 0
(b) product of the cube roots of unity is 1
(c) each complex cube root of unity is reciprocal of the other (d) All of the above
Hints: $1 + \omega + \omega^2 = 0$
Answer: (a)
45. A car of mass 1000 kg first travels forwards at 25m/s^2 and then backwards at 5m/s^{-1} . what is the change in the kinetic energy of the car?
(a) 200kj (b) 300kj (c) 325kj (d) 450 kj
Hints: $\Delta KE = K_f - K_i = \frac{1}{2} m [V_f^2 -$

$V_i^2] = - 300\text{kj}$
Answer: (b)

46. Choose the correct sentence of the following :
(a) I am much thankful to you.
(b) I am quite thankful to you
(c) I am just thankful to you
(d) I am very thankful to you
Hints: "very" is the correct degree of adjective which is used before word "thankful".
Answer: (d)
47. Which of the following reagent will convert acetic acid into acetyl chloride?
(a) Na Cl (b) $\text{HC l}/\text{ZnCl}_2$ (c) SOCl_2
(d) Hg
Hints: $\text{CH}_3\text{COOH} + \text{SOCl}_2 \rightarrow \text{CH}_3\text{COCl} + \text{SO}_2 + \text{HC l}$
Acetic acid Acetyl chloride
Answer: (b)
48. The concept of complex numbers as $a + I b$ was given by
(a) Gauss (b) Newton (c) Archimedes (d) Leibniz
Answer: (d)
49. Teflon is prepared by the polymerization of
(a) butadiene (b) vinyl cyanide
(c) propylene (d) tetra fluoroethene
Hints: $n \text{CF}_2 = \text{CF}_2 \rightarrow \{- \text{CF}_2 - \text{CF}_2 - \}_n$
Tetra fluoro ethane
50. Which one is the correct formula for finding the speed v of ocean waves in terms of the density of seawater, the acceleration of free fall g , the depth h of the ocean and the wavelength λ ?



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Hints: $d \sin \theta = m \lambda$ for 3rd order diffraction $\sin 45^\circ = 3\lambda / d = 3 \sqrt{2} \lambda / d$... (1) for highest order diffraction $\sin \theta = 1$ $d = m \lambda$... (2) comparing both we get $m = 4$

Answer: (a)

58. 'Hue and cry' means a:
(a) colorful cooking (b) shouting at the people
(c) Noisy public protest (d) Loud confused talking

Hints: the idiomatic expression means public protest.

Answer: (d)

59. Select the correct name of the compound

(a) Naphthalene (b) Diphenyl
(c) Phenanthrene (d) Diphenyl methane

Hints: methane is attached with two benzene rings.

Answer: (d)

60. What will be the remainder when $x^4 + 2x^3 - 2x - 3$, is divided by $(x + 2)$?

(a) -7 (b) -23 (c) -1 (d) None

Hints: $p(x) = x^4 + 2x^3 - 2x - 3$, $x + 2 = 0$, $x = -2$ $p(-2) = (-2)^4 + 2(-2)^3 - 2(-2) - 3 = 25$

Answer: (d)

61. Will you give me your bicycle?

Passive form of the sentence is:

(a) Will your bicycle be given to me by you?

(b) Shall you be given to me by your bicycle?

(c) I shall be given your bicycle by you?

(d) Your bicycle will be given to me by you?

Hints: sentence is interrogative.

tense: future simple

Answer: (a)

62. container?

(a) The molecules of the gas collide continually with each other.

(b) The molecules of the gas collide in elastically with the walls of the container.

(c) The molecules of the gas collide continually with the walls of the container.

(d) The weight of the molecules exerts a force on the walls of the container.

Hints: Gas molecules collide with the walls of container and in this way they exert pressure

Answer: (b)

63. The most reactive compound among the following is:

(a) Nitrobenzene (b) Toluene

(c) Benzoic acid (d) Benzene

Hints: CH_3 attach to benzene ring is a para directing group and it increases the reactivity of benzene ring.

Answer: (b)

64. $|Z1 + Z2|$ is: _____

(a) $= |Z1| + |Z2|$ (b) $> |Z1| + |Z2|$

(c) $= |Z1||Z2|$ (d) $< |Z1| + |Z2|$

Answer: (d)

65. On a particular railway track a train driver applies the brakes of the train at a yellow signal, a distance of 1 km from red signal, where it stops.

The maximum deceleration of the train is 0.2 ms^{-2} Assuming uniform deceleration what is the maximum safe speed of the train at the yellow signal?

(a) 20 m s^{-1} (b) 40 m s^{-1} (c) 200 m



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- s^{-1} (d) 400 m s^{-1}
Hints: $2as = V f^2 - V i^2 \rightarrow$
 $2 \times 0.2 \times 1000 = 0 - V i^2$
Answer: (a)
-
66. Considering the addition of hydrogen acids to alkenes, what is the correct order of reactivity?
(a) $\text{HC l} > \text{HB r} > \text{HI}$ (b) $\text{HI} > \text{HB r} > \text{HC l}$
(c) $\text{HB r} > \text{HI} > \text{HC l}$ (d) $\text{HC l} > \text{HI} > \text{HB r}$
Hints: addition of halogen and alkene depends on the bond between hydrogen. Weaker the weaker greater will be the reactivity. H-1 bond is weaker than H-Br and H-Ci
Answer: (b)
-
67. Consider the solubility of the following sparingly soluble salt in water.
 $\text{Ag Cl(S)} \rightleftharpoons \text{Ag}^+(\text{aq}) + \text{Cl}^-(\text{aq})$
 $\text{KSP} = \text{Kc} [\text{Ag}^+] [\text{Cl}^-]$
The precipitation of Ag Cl will occur if the product of ionic concentration is:
(a) equal to KSP (b) less than KSP
(c) More than KSP (d) Both a. & b.
Hints: If ionic product is greater than $K_s P$ then solution is super saturated.
Answer: (c)
-
68. Equation of the parabola with vertex at (0,0) and directrix $y + 2 = 0$ is:
(a) $y^2 = 8x + 8y$ (b) $x^2 = -8y$
(c) $y^2 = 8x$ (d) $x^2 = 8y$
Hints: with $y = -2$ & $a = 2$ eq of parabola $y^2 = 4(2)x = 8x$
Answer: (c)
-
69. In a stationary wave, the distance between a consecutive node and an antinodes in equal to:
a) $\frac{\lambda}{2}$
b) $\frac{3\lambda}{4}$
c) λ
d) $\frac{\lambda}{4}$
Hints: Distance between two nodes or antinodes is $\frac{\lambda}{2}$
Distance between a node and next antinodes is $\frac{\lambda}{4}$ Answer: (d)
-
70. He said to me, —Why have you come late! Indirect form of the sentence is:
(a) He asked me why I came late.
(b) He asked me why I had come late.
(c) He asked me why I have come late.
(d) He told me as to why I had come late.
Hints: the reporting speech is in present perfect tense. Sentence is interrogative.
Answer: (b)
-
71. Select the oxide which will be acidic in nature:
(a) P_2O_5 (b) Ca O (c) K_2O (d) Ba O
Hints: $\text{p}_2\text{O}_5 + 3\text{H}_2\text{O} \rightarrow 2\text{H}_3\text{PO}_4$ (phosphoric acid)
Answer: (a)
-
72. If (x_1, y_1) , (x_2, y_2) , (x_3, y_3) be the vertices of a triangle ABC then the area of the triangular region is _____
(a) $x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)$
(b) $\frac{1}{2} [x_1 (y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$
(c) $\frac{1}{2} [x_1 (y_2 + y_3) + x_1(y_2 + y_1) +$



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(a) Diffracted (b) polarized
(c) interfered (d) refracted
Hints: polarization is the property of transverse waves : longitudinal waves cannot be polarized
Answer: (b)

98. If we leave this minute
(a) I'm sure we'll make it (b) I'm sure we'll take it
(c) I'm sure we'll get it (d) I'm sure we'll turn it

Hints: this is the completion of a conditional structure. The "if" clause is in present tense and thus result clause must be in future simple.
Answer: (a)

99. I insist _____ the withdrawal of your statement.

(a) for (b) at (c) in (d) on
Hints: the correct preposition is required. after the word insist preposition "on" is used
Answer: (d)

100. The rate law for the reaction $A \rightarrow C + k$ is given as: Rate = $K[A]$ the unit of K will be:

(a) mole⁻¹ dm³ s⁻¹ (b) mole l d m⁻³ s⁻¹

(c) s⁻¹ (d) mole⁻¹ d m
Hints: As rate = $\frac{dx}{dt} = \frac{\text{moles}}{\text{dm}^3 \text{sec}}$, for equation rate = $K[A]$ $K = \frac{\text{rate}}{[A]} = \text{sec}^{-1}$

Answer: (c)

101. If \vec{a} and \vec{b} are non-collinear vectors

then $\vec{p} + \vec{q} = 0$ implies: a b a b
(a) $p \neq 0, q \neq 0$ (b) $p = q = 0$
(c) $p \neq 0, q = 0$ (d) $p = 0, q \neq 0$
Answer: (b)

- 102.

If the length of a simple pendulum is halved and mass is doubled then its time period.

(a) increases by (b) remains constant $\sqrt{2}$
(c) cannot be predicted (d) decreases by $\sqrt{2}$

Hints: $T = 2\pi \sqrt{\frac{l}{g}}$ now length is halved:

$$T = 2\pi \sqrt{\frac{l}{g}} = \sqrt{\frac{l}{2g}} = \frac{1}{\sqrt{2}} (2\pi \sqrt{\frac{l}{g}}) = \frac{T}{\sqrt{2}}$$

Answer: (d)

103. The maximum kinetic energy of photoelectrons emitted depends upon:

(a) frequency of incident light
(b) intensity of incident light.
(c) temperature of the metal surface
(d) None of the above

Hints: Einstein equation of photoelectric effect $KE_{\text{max}} = hf - \phi$ hence the maximum K.E depends on freq. of incident light.

Answer: (a)

104. How many hydrogen atoms are present in one mole of water?

(a) 6.02×10^{23} atoms (b) 1.806×10^{24} atoms
(c) 1.204×10^{24} atoms (d) 3.01×10^{23} atoms

Hints: 1 mole of H₂O = 2 moles of H atom. Of H atom will be twice the number of water molecules

$: 6.02 \times 10^{23} \text{ molecule} = 2 \times 6.022 \times 10^{23} = 1.204 \times 10^{24} \text{ atoms}$

Answer: (c)

105. $\lim_{x \rightarrow \infty} \frac{x}{\log x} = ?$

(a) 0 (b) 2 (c) 3 (d) ∞



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form the equation $x = P - Q$. P is measured as $(1.27 + 0.02)m$ and Q is measured as $(0.03 + 0.01)m$. what is the percentage uncertainty in x to one significant figure?

(a) 4% (b) 2% (c) 3% (d) 7%

Hints: $x = p - Q = (1.27 \pm 0.02) - (0.03 \pm 0.01) = (0.4 \pm 0.03) m$

fractional uncertainty in $x = \frac{0.03}{0.4} =$

$0.07 = 7\%$

Answer: (d)

151. Which one of the following polymers contains nitrogen?

(a) PVC (b) Teflon (c) Nylon (d) polypropylene

Hints: in nylon 1 monomer is hexamethylene dimine.

Answer: (c)

152. Power of the highest derivative appearing in an equation is called its:

(a) Degree (b) order (c) power (d) index

Answer (b)

153. Which force is caused by a pressure difference:

(a) Friction (b) viscous force (c) up thrust (d) weight

Hints: By definition

Answer: (c)

154. Acetaldehyde on treatment with Fehling's solution forms red precipitate. The color is due to the formation of:

(a) silver nitrate (b) silver (c) CuO (d) Cu₂O

Hints: acetaldehyde + Fehling sol \rightarrow Su₂O (red p p t)

Answer: (d)

155. A sequence is a function whose

domain is:

(a) N (b) R (c) W (d) Q

Answer: (a)

156. The symbol g represents the acceleration of free fall. Which of these statements is correct?

(a) g is gravity (b) g is the ratio weight /mass

(c) g is the weight of an object

(d) g is reduced by air resistance

Hints: weight = mass x acceleration of freefall $g = \text{weight/mass}$

Answer: (b)

157. —His bad friends will ruin him! Passive form of the sentence is:

(a) he will ruin his bad friends

(b) he is ruined by his bad friend

(c) he will be ruined by his bad friends

(d) he is being ruined by his bad friends

Hints: here the voice from active into passive is to be changed. The sentence is future simple tense.

Answer: (c)

158. When formaldehyde is treated with 50% sodium hydroxide solution, it undergoes.

(a) cannizzaro's reaction (b) aldol condensation (c) Wurtz reaction (d) hydrolysis

Hints: only formaldehyde is treated gives cannizzaro reaction.

Answer: (a)

159. If $a, G_1, G_2, G_3, \dots, G_n$, b is a G.P then $G_n =$

a) $\frac{an}{bn-1}$

b) $B\left(\frac{a}{b}\right) \frac{n}{n+1}$

c) $\left(\frac{b}{a}\right) \frac{n}{n+1}$



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when it reaches its highest point?

- (a) 0.71 E (b) 0.50 E (c) 0.87 E (d) E

Hints: at the point of projection: $K_o = \frac{1}{2} m v_o^2$ at the point of maximum

height $v = v_o \cos \varphi = v_o \cos 45_o = \frac{v_o}{\sqrt{2}}$ so at the point of maximum

height $K = \frac{1}{2} m v^2 = \frac{1}{2} m \left(\frac{v_o}{\sqrt{2}}\right)^2 = \frac{K_o}{2} = 0.5K_o = 0.5E$

Answer: (b)

194. What is the approximate mass of nucleus of uranium?

- (a) 10–13kg (b) 10–20kg (c) 10–23kg (d) 10–30kg

Hints: mass of 6.02×10^{26} nuclei of U = 235kg mass of 1 U atom

$= \frac{235}{6.02 \times 10^{26}} \text{ kg} = 39 \times 10^{-26} = 10^{-25} \text{ kg}$

Answer: (c)

195. Ethene could be obtained from ethyl bromide by:

- (a) Hydrolysis (b) Nucleophilic substitution

- (c) Dehydration (d) Dehydrohalogenation

Hints: $\text{CH}_3 \text{CH}_2 \text{Br} + \text{KOH} \xrightarrow{\text{alcohol}} \text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O} + \text{KBr}$ as this reaction is dehydrohalogenation reaction.

Answer: (d)

196. The quadratic equation whose roots are 3 and 4 is

- (a) $x^2 - 7x + 12$ (b) $x^3 + 7x + 12$

- (c) $x^3 + 12x + 7$ (d) $x^2 - 12x + 7$

Hints: $x^2 - Sx + p = 0$, $S = 3 + 4 = 7$ $p = 3 \times 4 = 12$

Answer: (a)

197. Choose the correct sentence out of the following:

- (a) As far as I know he bears a good

moral character

- (b) As long as I know, he bears a good moral character

- (c) So far as I know, he bears a good moral character

- (d) Not that I know, he bears a good moral character

Hints: "as far as" is the correct expression.

Answer: (a)

198. Ketones on reaction with methyl magnesium iodide will produce:

- (a) tertiary alcohol (b) primary alcohol

- (c) secondary alcohol (d) All of these

Hints: $\text{RMgX} + \text{Ketone} \rightarrow 3^\circ \text{alcohol}$

Answer: (a)

199. If $11P_n = 990$ then $n =$

- (a) 2 (b) 3 (c) 5 (d) 7

Hints: ${}^{10}P_3 = \frac{10!}{(10-3)!} = 720$

Answer: (b)

200. Sound waves, emitted by small loudspeaker are reflected by wall. The frequency of the waves is adjusted until a stationary wave is formed with the antinode nearest the wall at a distance x from the wall. Which expression goes in terms of x and the speed of sound is:

- a) $f = 4c/x$

- b) $f = 2c/x$

- c) $f = c/2x$

- d) $f = c/4x$

Hints: $x = \lambda/4$ $\lambda = 4x$, $v = \lambda f$, $c = 4xf$

$\rightarrow f = c/4x$

Answer: (d)



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68. Acetic acid reacts with methanol in the presence of an acid catalyst to give:
A) Methyl formate B) Ethyl formate
C) Methyl acetate D) Ethyl acetate
Hints: O
$$\text{CH}_3 - \text{C} - \text{OH} + \text{H} - \text{O} - \text{CH}_3 \xrightarrow{\text{H}_2\text{SO}_4} \text{CH}_3 - \text{C} - \text{OCH}_3 + \text{H}_2\text{O}$$

Answer: (c)
69. An ideal transformer steps up or steps down:
A) Energy B) AC voltage
C) DC voltage D) Power
Hints: Transformer works on the principal of mutual inductance and steps up/down AC voltage.
Answer: (b)
70. Growth promoting substance in plant is:
A) F.A.D B) Chlorophyll a
C) I.A.A D) ABA
Hints: Indol acetic acid a naturally occurring auxinur 2- 4-D in lab is a growth promoting substance, FAD having adenine dinucltide is a coenzyme.
Answer: (c)
71. Select the strongest reducing agent:
A) Cl⁻ B) Ne
C) Na⁺ D) Ca²⁺
Hints: Cl⁻ ion is electron rich and bigger in size thus it loses electrons easily and ∴. The strongest reducing agent.
Answer: (a)
72. Three equal resistors connected in parallel have equivalent resistance R/3. When they are connected in series then the equivalent resistance is:
A) R/3 B) R
C) 2R D) 3R
Hints: $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ (parallel) $R_{cp} = R_1 + R_2 + R_3$ series Here, $R_1 = R_2 = R_3 = R \rightarrow R_{eq} = 3R$
Answer: (d)
73. Choose the correct sentence out of the following:
A) The sun has been shining since two hours.
B) The sun has been shining for about two hours.
C) The sun has been shining from two hours.
D) The sun has been shining by two hours.
Answer: (a)
74. Steroid hormones are produces by:
A) Testes and ovaries B) Adrenal glands and gonads
C) Adrenal cortex and gonads
D) Gonads and thyroids
Answer: (c)
75. Which one of the following is not a vector quantity?
A) Electric field intensity
B) Gravitational field intensity
C) Magnetic induction
D) Electromotive force
Hints: $e m f = \text{energy per unit charge}$
Answer: (d)
76. B.C.G vaccines are usually given to:
A) Children B) Adults
C) Special persons D) All of the above
Answer: (a)
77. Proteins, carbohydrates and fats



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form three great classes of foodstuffs commonly called:
A) Trivirates B) Triumvirates
C) Trisvirates D) All of the above
Answer: (b)

78. The velocity of projectile at its maximum height is:
A) Zero B) Minimum
C) Maximum D) In between maximum and minimum
Hints: Velocity of projectile is min at point of max height and equals to horizontal component of velocity of projection
Answer: (b)

79. If you want to play cricket ,.....
A) you ought to join our club.
B) you ought to join with our club.
C) you ought joined our club.
D) you ought to join in our club.
Hints: conditional structure is to be completed.
Answer: (a)

80. Replication of D.N.A occurs in:
A) Inter phase B) Prophase
C) Metaphase D) Anaphase
Hints: Replication of D.N.A takes place in "S" phase of inter phases
Answer: (a)

81. Allah, the Almighty, has blessed him ___ a son.
A) by B) along
C) from D) with
Hints: Correct preposition is to be chosen.
Answer: (d)

82. Regeneration of cartilage is carried on by:
A) Collagenous fibers B) Blood vessels
C) Perichondrium D) Matrix

Answer: (d)

83. CH₄ on complete oxidation in the presence of Cu as catalyst under 200 atm yield:
A) Methanol B) Formaldehyde
C) Formic acid D) Carbon dioxide gas
Hints: It gives CO₂, H₂O & heat.
Answer: (d)

84. The solids in which the molecules or ions are arranged in a regular repetitive manner are called:
A) Amorphous solids B) Glassy solids
C) Polymers D) Crystals
Hints: In crystals the particles are in order and thus they have definite geometrical shape.
Answer: (d)

85. Nuclear mitosis occurs in the kingdom of:
A) Monera B) Protista
C) Plantae D) Fungi
Hints: N. Metosis in which nucleus divides without separating from each other.
Answer: (d)

86. Compared to benzene, nitration of toluene takes place at:
A) slower rate B) faster rate
C) same rate D) depends on the conditions
Hints: Toluene has electron donor group i. e methyl.
Answer: (b)

87. Lenz's law is a particular form of law of conservation of:
A) Charge B) Current
C) Energy D) Magnetic field
Hints: Lenz's law is the



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132. When a neutral body is rubbed and it becomes positively charged, it must have:
A) Lost electrons B) Lost protons
C) Gained protons D) Gained electrons
Hints: When a body loses e^- , it becomes +vely charged.
Answer: (a)
133. Penicillin is obtained from:
A) Algae B) Yeast
C) Mushroom D) Mold
Hints: Penicillin is obtained from the mold penicillium sp of fungus. Penicillin is obtained from the mold penicillin
Answer: (d)
134. Which of the following elements with a given electronic configuration has the highest ionization potential value?
A) $1s^2 2s^2 2p^3$ B) $1s^2 2s^2 2p^4$
C) $1s^2 2s^2 2p^6 3s^1$ D) $1s^2 2s^2 2p^6 3s^2 3p^3$
Hints: a) is smaller in size. Its p orbital is also half filled
Answer: (a)
135. When a charged particle enters a uniform magnetic field, there is a change in:
A) Kinetic energy B) Magnitude of velocity
C) Direction of velocity D) All of these
Hints: Magnetic force is perpendicular to velocity. Thus it can only change the direction of the velocity.
Answer: (c)
136. Insuline is produced by:
A) Alpha-cells B) Beta-cells
C) Delta-cells D) Gamma-cells
Hints: Alpha cell secrete glucagon, delta cell secrete somatostatin (which regulate or inhibit α β cell) and gamma cells secrete pancreatic pancreatic polypeptide.
Answer: (b)
137. Which one is not responsible for the formation of acid rain?
A) CO_2 B) SO_2 C) CO D) NO_2
Hints: CO is neutral.
Answer: (c)
138. Which of the following hybridization can explain the shape of $BeCl_2$?
A) sp^2 hybridization B) s p hybridization
C) sp^3 hybridization D) dsp 2 hybridization
Hints: $Cl-Be-Cl$. In the valence shell of Be there are (s p) two electron pairs.
Answer: (b)
139. According to Millikan's oil drop experiment the charge on an oil droplet is:
A) Quantized B) Integral multiple of e^-
C) Not less than e^- D) All of them
Hints: Electric charge is quantized, i. e. $q = ne$, where $n=0, \pm 1, \pm 2, \dots$ and e is quantum of electric charge.
Answer: (d)
140. Did he buy a car yesterday?



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Passive form of the sentence is:

- A) Was a car bought by him yesterday?
- B) Has a car been bought by him yesterday?
- C) Is a car bought by him the other day?
- D) Had a car been bought by him yesterday?

Hints: Sentence Is interrogative & in past simple tense

Answer: (a)

141. The enthalpy of the elements at 1 atm: pressure and 298 K is arbitrary given the value of:
A) 0.1 B) 1.0 C) 29.8 D) Zero
Hints: The enthalpy of formation of all elements is zero at standard states.

Answer: (d)

142. If two forces P and Q are such that $|P + Q| = |P - Q|$, then the angle between P and Q is:
A) 00 B) 300 C) 900 D) 1800

Answer: (c)

143. Chlorophyll a and b chiefly absorb:
A) Violet blue light B) Orange light
C) Blue —red light D) Red, orange light

Answer: (c)

144. Select the correct statement about lattice energy:

- A) The energy absorbed when 1 mole of ionic crystal Lattice is formed from its constituent ions in the gaseous state.
- B) The energy liberated when 1 mole of an ionic crystal Lattice is formed from its constituent ions in the gaseous state
- C) The energy liberated when 1

mole of an ionic crystal Lattice is split into its constituent ions in the gaseous state

D) None of the above

Hints: $Na^+(g) + Cl^-(g) \rightarrow NaCl(s)$
L.E = - 787kJ/mole $NaCl(s) \rightarrow Na^+(g) + Cl^-(g)$ L.E = + 787kJ/mole

Answer: (b)

145. Two blocks of masses 1.0 kg and 3.0 kg placed in contact are acted upon by a force of 40 N. The acceleration of 1.0 kg mass will be:
A) 40 m s⁻² B) 10 m s⁻² C) 30 m s⁻² D) 50 m s⁻²

Hints: $F = ma$, $a = \frac{F}{m_1+m_2} = \frac{40}{1+3} = 10 \text{ ms}^{-2}$

Answer: (b)

146. Choose the correct sentence out of the following:

- A) Each of them deserves praise.
- B) Each one of them deserves praise.
- C) Each one of them deserves praise.
- D) Every one of them deserves praise.

Hints: Distributive adjective “everyone” is correct.

Answer: (d)

147. Following nasal passages are composed of cartilage except:

- A) Trachea B) Bronchus
- C) Bronchioles D) Tracheoles

Hints: Tracheoles are present in insects.

Answer: (d)

148. A set of xylem tissues are:

- A) Vessels, tracheids, parenchyma
- B) Sieve tubes, companion cell, fibers



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157. A Test cross is:

- A) $Tt \times Tt$ B) $Tt \times tt$
C) $TT \times Tt$ D) $TT \times TT$

Hints: A test cross is crossing of a phenotypically dominant organism with the recessive parent.

Answer: (b)

158. Which compound is formed when Ammonium hydroxide is added to silver chloride?

- A) $[Ag(NH_3)_2]Cl$ B) $[Ag(NH_3)]Cl$
C) $[Ag(NH_3)_4]Cl$ D) $[Ag(NH_3)_6]Cl$

Hints: Silver forms complex with NH_3 .

Answer: (a)

159. The spring constant of a spring is k . If the spring is cut into two halves then the spring constant of one of the half is:

- A) $k + 2$ B) $k/2$ C) $2k$ D) k

Hints: If spring is cut in two halves then double force is required to produce unit extension. Therefore spring constant becomes double.

Answer:

160. Carotenoid contains:

- A) Carotenes B) Xanthophylls
C) Chlorophyll - C D) Both A) and B)

Hints: Carotenes & Xanthophyll reddish

Brown to pale yellow golden pigments i. e. Reddish Brown canteen. Pale: zeaxanthin yellow golden phycoxanthin. Both zeaxanthin & phycoxanthin are types of xanthophylls.

Answer: (d)

161. Which one is spontaneous chemical

reaction?

- A) $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$
B) $Zn^{2+} + Cu \rightarrow Cu^{2+} + Zn$
C) $2Fe(OH)_3 \rightarrow 2Fe + O_2 + 3H_2O$
D) $2NaCl \rightarrow 2Na + Cl_2$

Hints: The potential of the reaction is positive.

Answer: (a)

162. A force of 6 N acts horizontally on a stationary mass of 2 kg for 4 s.

The kinetic energy in Joule is:

- A) 12 B) 144 C) 72 D) 48

Hints: Here $F\Delta t = \Delta P = mv \rightarrow v =$

$$\frac{F\Delta t}{m} = \frac{6 \times 4}{2} = 12 \text{ m/s. Now K.E} = \frac{1}{2}mv^2$$

$$= \frac{1}{2}(2)(12)^2 = 144 \text{ J}$$

Answer: (b)

163. If it did not rain in time, there ___ a horrible famine.

- A) would have been B) will be
C) would be D) will have been

Hints: It is the second conditional structure. The second clause of the sentence is to be completed.

Answer: (c)

164. A person travels a distance $x = 20t + 2At^2$, where A is a constant. The acceleration of the person is:

- A) $A/4 \text{ ms}^{-2}$ B) $4/A \text{ m s}^{-2}$
C) 4 ms^{-2} D) $4A \text{ ms}^{-2}$

Hints: by comparing equation $x =$

$$20t + 2At^2 \text{ with } x = V_i t + \frac{1}{2}at^2 = 2A$$

$$\rightarrow a = 4A \text{ m/s}^2$$

Answer: (d)

165. Attraction of water molecules to the xylem vessels is called:

- A) Adhesion B) Cohesion
C) Collision D) Corrosion

Answer: (a)

166. In which of the following



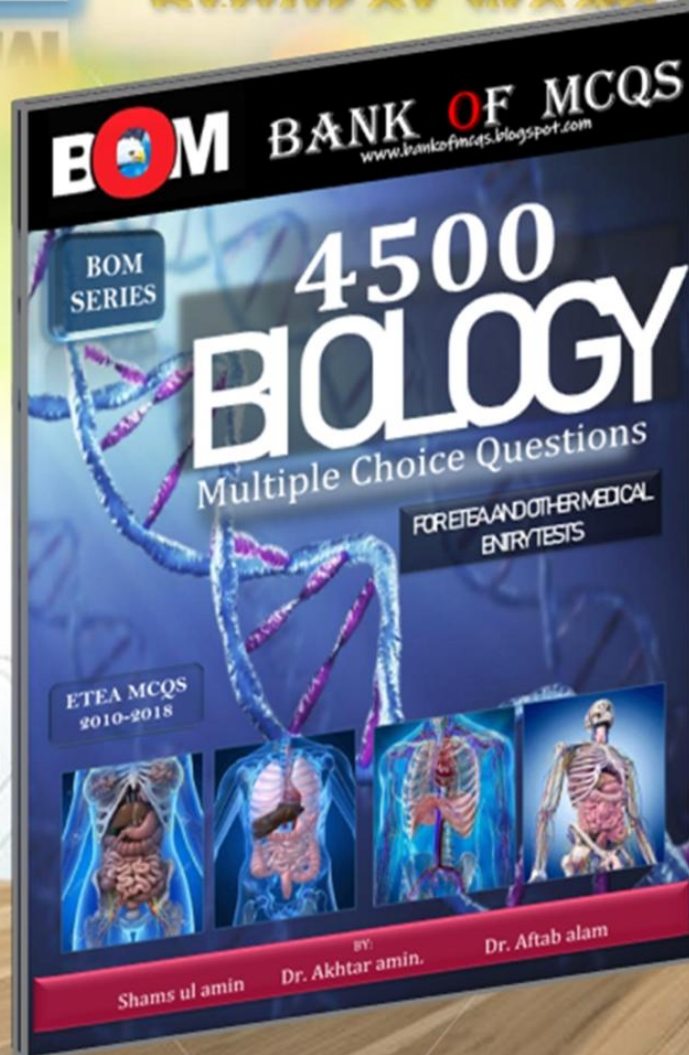
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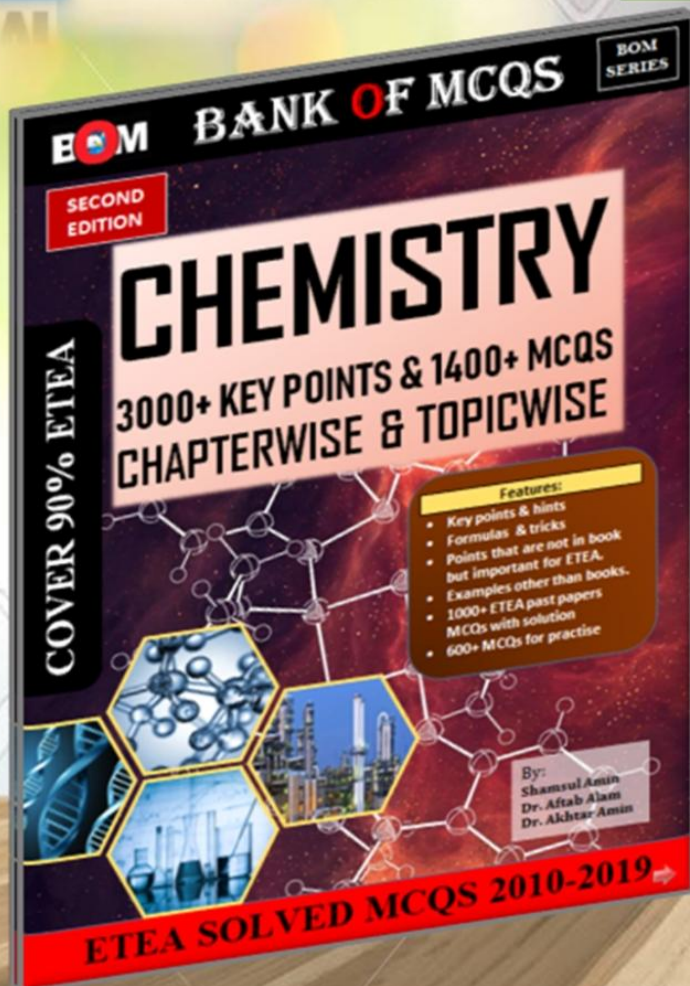
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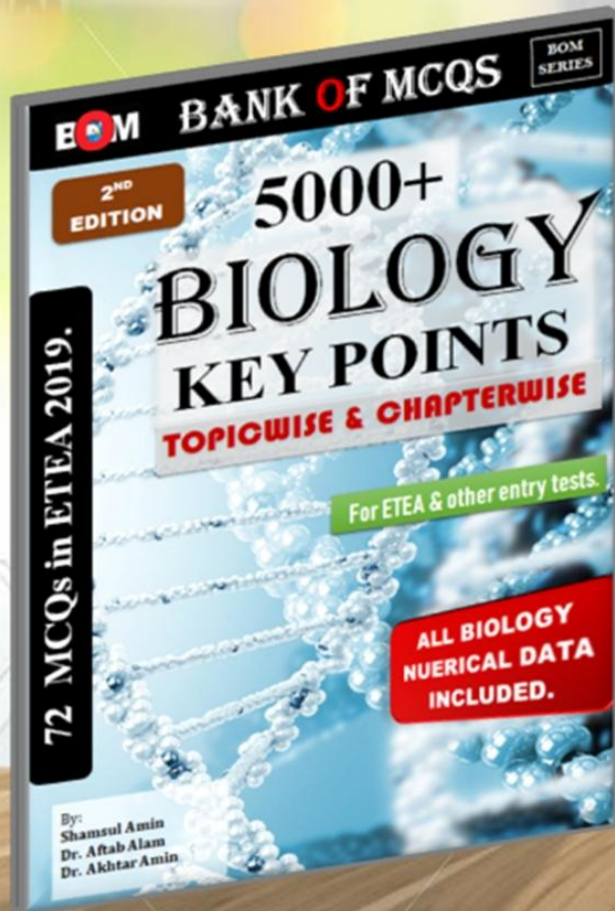
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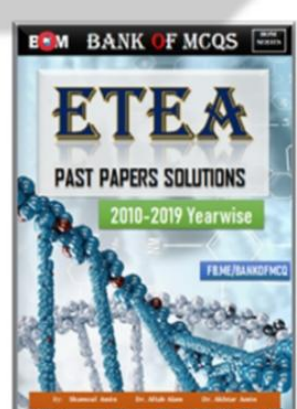
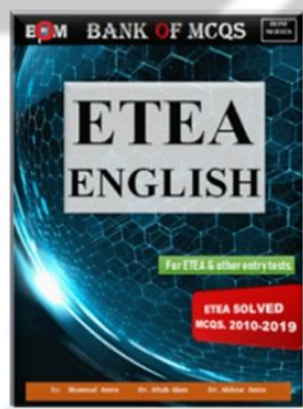
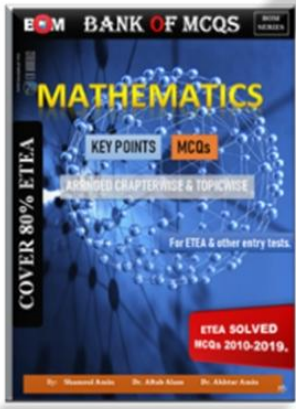
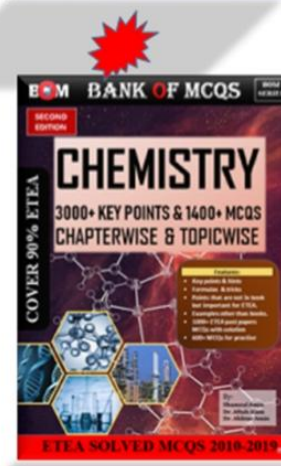
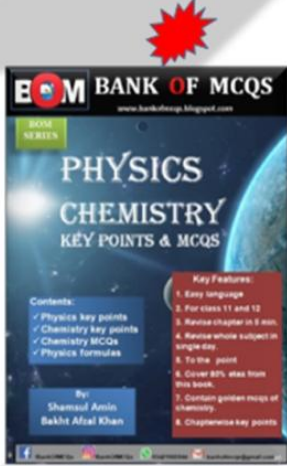
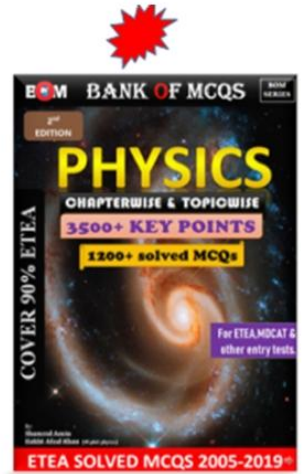
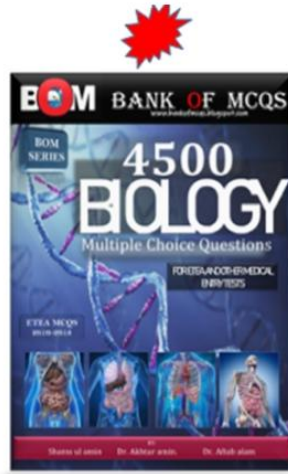
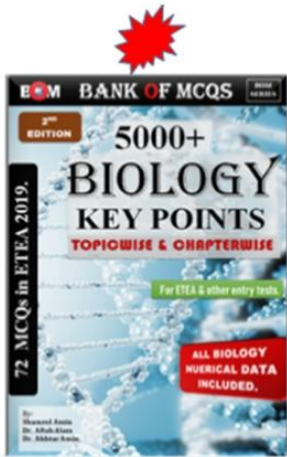


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S. No	MCQs
1.	<p>Modulus of $a + i b$ is:</p> <p>(a) $a^2 + b^2$ (b) $\sqrt{a^2 - b^2}$ (c) $\sqrt{a^2 + b^2}$ (d) $a - i b$</p> <p>Hints: Modulus of $a + i b \rightarrow \sqrt{(a)^2 + (b)^2} = \sqrt{a^2 + b^2}$ Answer: (b)</p>
2.	<p>For the given set of ions in alkali metals, the hydration energy _____ with increase in ionic size:</p> <p>(a) decrease (b) increase (c) first decreases and then increases (d) first increases and then decreases</p> <p>Hints: Hydration energy depends on charge density Answer: (a)</p>
3.	<p>m when rounded off is 1016 m which is equal to: 15 10 5.9</p> <p>(a) Tera meter (b) pet a meter (c) ex a meter (d) light year</p> <p>Answer: (d)</p>
4.	<p>$\lim_{x \rightarrow 0} \frac{\sin x}{x} = ?$</p> <p>(a) 0 (b) 1 (c) 2 (d) 6</p> <p>Hints: law of limits when θ is very very small. Answer: (b)</p>
5.	<p>The hydrides of Be and Mg are classified as intermediate hydrides. Their behavior is:</p> <p>(a) non-volatile and ionic in nature (b) volatile and covalent in nature (c) polymeric and covalent in nature</p>
6.	<p>(d) crystalline and covalent in nature Hints: be and mg being smaller size possess covalent characteristics. Answer: (c)</p>
6.	<p>If 7.635 and 4.81 are two significant numbers, their multiplication in significant digits is:</p> <p>(a) 36.72435 (b) 36.724 (c) 36.72 (d) 36.7</p> <p>Hints: the least significant number is 3. Answer: (a)</p>
7.	<p>$(-1)^{\frac{21}{2}} = ?$</p> <p>(a) $-i$ (b) (c) 1 (d) $-1 i$</p> <p>Hints: $(-1)^{\frac{21}{2}} = (i^2)^{\frac{21}{2}} = (i)^{-21} = ((i^2)^{10} \cdot i)^{-1} = i^{-1} = -i$ Answer: (a)</p>
8.	<p>The oxide of chlorine, Cl_2O_7 in nature is:</p> <p>(a) strongly basic (b) weakly basic (c) strongly acidic (d) weakly acidic</p> <p>Hints: In Cl_2O_7, Cl possess + 7 oxidation state, which makes it strongest acid Answer: (c)</p>
9.	<p>The horizontal and vertical components of a force are 10N each. The direction of the resultant force with x - axis is:</p> <p>(a) 30° (b) 45° (c) 60° (d) 75°</p> <p>Hints: $\tan \theta = \frac{f_y}{f_x} \theta = \tan^{-1} \left(\frac{f_y}{f_x} \right)$ Answer: (b)</p>
10.	<p>Many people have _____ about winning a big prize in the lottery</p>



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- (c) $(-1)^i - jMij$ (d) $(1)^i + jMij$
Answer: (b)
-
22. The phenomenon of inert pair formation in boron family _____ down to group.
(a) decreases (b) increases
(c) first increases and then decreases
(d) first decreases and then increases
Hints: As “in” and “T i” possess inert pair effect
Answer: (b)
-
23. The moment arm of a force of 0.6 N to produce maximum torque of 0.48 N. m is:
(a) 2.88m (b) 0.08m (c) 0.8 m (d) 0.288 m
Hints: $\theta = 90^\circ$ Use $\tau = r f \sin\theta = \frac{0.48}{0.6}$
0.8m
Answer: (c)
-
24. $f(x) = f(0) + f'(0)x + \frac{x^2}{2!} f''(0) + \dots + \frac{x^n}{n!} f^n(0)$ is called :
(a) Taylor series (b) binomial series
(c) Laurent series (d) Maclauren series
Answer: (d)
-
25. The compound, Borax is used in borax bead test for the detection of cations. The molecular formula of compound is :
(a) $Ca_2B_6O_{11}5H_2O$ (b) H_3BO_3
(c) $Na_2 B_4 O_7 \cdot 10H_2O$ (d) $(C_2H_5)_3BO_3$
Answer: (c)
-
26. Bodies which fall freely under the action of gravity is an example of:
(a) uniform acceleration (b) variable acceleration
(c) uniform velocity (d) average acceleration
-
- Hints: g does not depend on mass ‘m’
Answer: (a)
-
27. The roots of equation $25x^2 - 30x + 9 = 0$ are
(a) imaginary (b) rational and equal
(c) rational and unequal (d) irrational and equal
Hints: if $b^2 - 4ac > 0$ then roots are real and different if $b^2 - 4ac = 0$, roots are equal and real if $b^2 - 4ac < 0$, roots are imaginary.
Answer: (b)
-
28. $[NiCl_4]^{2-}$ is tetrahedral shaped complex, the bond angle $\angle Cl - Ni - Cl$ is
a) 120° (b) 107° (c) 105° (d) 109°
Hints: Tetrahedral structure has generally 109.5°
Answer: (d)
-
29. A man throws a ball vertically upward in a compartment of the train which is moving with uniform velocity. The ball will fall:
(a) in his hand (b) in front of him
(c) behind him (d) beside him
Hints: Because train does not accelerate.
Answer: (a)
-
30. When I told him about it, he
(a) is just laughing (b) has just laughed
(c) was just laughing (d) just laughed
Hints: “ just laughed ” is the compound sentence in clause the first clause is in past simple, the second clause must have the same tense.
Answer:



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31. The minimum value of the function is: $f(x) = x^2 - x - 2$ is:
a) -2 (b) $\frac{1}{2}$ (c) -1 (d) 0
Hints: $f'(x) = 2x - 1 = 0$, $x = \frac{1}{2}$
Double derivative test
Answer: (b)
32. The formula of potassium manganate is
(a) KMnO_4 (b) K_2MnO_4
(c) K_3MnO_4 (d) K_2MnO_3
Answer: (a)
33. A missile is fired with the speed of 98ms^{-1} at 30° horizontally. The missile is borne for
(a) 20 seconds (b) 25 seconds
(c) 10 seconds (d) 5 seconds
Hints: $T = \frac{2v \sin \theta}{g} = \frac{2 \times 98 \times \sin 30^\circ}{9.8} = 10\text{sec}$
Answer: (c)
34. For what value of k will the equation have sum of roots equal to product of roots:
(a) 3 (b) -2 (c) -4 (d) 4
Hints: sum of roots = products of roots
 $\frac{+k}{1} = \frac{4}{1} \rightarrow k = 4$
Answer: (d)
35. Phosphorus acid H_3PO_3 is highly soluble in water and behaves as:
(a) Monobasic Acid (b) Dibasic acid
(c) Tribasic acid (d) None of the above
Hints: Two H- atoms are attached to O_2
Answer: (b)
36. The change in momentum of the body is equal to:
A) Force (b) Torque (c) Impulse (d)
- Pressure
 $F = \frac{\Delta p}{\Delta t}$, $\Delta p = F \Delta t$
Answer: (c)
37. $\int x e^x dx = ?$
a) $X e^x - e^x + c$
b) $X e^x - e^x + c$
c) $e^x + cx + c$
d) $e^x + c$
Hints: $\int x e^x dx \rightarrow x \cdot e^x - \int 1 \cdot e^x dx = x e^x - e^x + c$ i ii [integration by parts]
Answer: (a)
38. Nitric oxide acts as / an:
(a) oxidizing agent (b) reducing agent
(c) both as reducing and oxidizing agent
(d) neither oxidizing nor reducing agent
Hints: N possess + 2 oxidation state which may be converted to + 5 or to -3.
Answer: (c)
39. The dimension of work are similar to the dimensions of:
(a) impulse (b) torque
(c) power (d) angular momentum
Hints: Torque = $r \times f \times w = F \cdot d$
Answer: (b)
40. Sabiha's dress fits her like a glove. The underlined phrase means:
(a) is too big (b) is too short
(c) fits her very well (d) is very comfortable
Hints: The expression "fits like a glove" means fits really well
Answer: (c)
41. $\int \frac{dx}{\sqrt{a^2 - x^2}} = ?$
a) $\cos^{-1} \left(\frac{x}{a} \right) + c$



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61. The ratio in which y-axis divides the line joining point (2, -3) and (-5, 6) is:
(a) 2 : 3 (b) 1 : 2 (c) 3 : 5 (d) 2 : 5
Answer: (a)
62. Methane can be prepared by the reaction of
(a) Iodomethane with sodium in dry ether
(b) methanol with conc H₂SO₄
(c) sodium methanoate with soda lime
(d) reduction of idomethane
Hints: $\text{CH}_3 - \text{I} + 2\text{H} \rightarrow \text{CH}_4 + \text{HI}$
(catalyst: Zn + HCl)
Answer: (d)
63. two boats moving parallel fastly; close to each other in the same direction will:
(a) attract each other (b) repel each other
(c) remain moving in the same direction
(d) sink
Hints: Because pressure decreases.
Answer: (a)
64. The point of intersection of the medians of a triangle is called: (a) in-center (b) centroid
(c) orthocenter (d) circumcenter
Answer: (b)
65. 2,3 dimethyl, 2 butene undergoes catalytic Hydrogenation to give
(a) 2,2 dimethyl butane (b) 2 - methyl pentane
(c) 2,3 dimethyl butane (d) 3 - methyl pentane
Hints:
Answer: (c)
66. The angular frequency of then mass attached to spring when vibrates with the frequency of 0.6Hz is:
(a) 0.6 Hz (b) 3.77 Hz
(c) 0.06 rad. sec⁻⁴ (d) 3.77 rad. sec⁻⁴
Hints: $\omega = 2\pi f = 2\pi(0.6) = 3.77$
Answer: (d)
67. Two lines $a_1x + b_1x + c_1 = 0$ and $a_2x + b_2x + c_2 = 0$ are parallel if:
a) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ b) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ c) $\frac{n_1}{c_2} = \frac{b_2}{c_2}$ d) $\frac{a_1}{c_1} = \frac{a_2}{c_2}$
Hints: for two lines to be parallel, $-\frac{a_1}{b_1} = -\frac{a_2}{b_2} \rightarrow \frac{a_1}{b_1} = \frac{a_2}{b_2}$
Answer: (a)
68. The combustion of one mole of propane C₃H₈ produces how many moles of water?
(a) 2 (b) 3 (c) 4 (d) 5
Hints: $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$
1mole of propane produces 4 mole of H₂O
Answer: (c)
69. When length of a simple pendulum is increased four times, the frequency of its oscillation will become:
(a) one fourth (b) half (c) double (d) four times
Hints: $f = \frac{1}{2\pi} \sqrt{\frac{g}{l}} \rightarrow l' = 4l$
Answer: (b)
70. Don't worry what other people think
(a) just take not note of them
(b) just take no sign of them
(c) just take not hint of them
(d) just take no notice of them
Hints: "take no notice" means not



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an observer, this clock with respect to the observer will:

- (a) run fast (b) run slow
(c) run normally (d) stop

Hints: Runs normally because in the same reference.

Answer: (b)

170. —Influenza is to —Virus as —Typhoid is to _____

- (a) bacteria (b) bacillus
(c) parasites (d) protozoa

Hints: Influenza is a disease caused by virus. In the same way typhoid is a disease caused by bacteria.

Answer: (a)

171. In binomial expansion $(a + b)^n$ pascal's triangle is used to find:

- (a) in (b) a, b
(c) binomial coefficients (d) None

Answer: (c)

172. The electronic configuration of gallium, atomic number 31 is:

- a) $[Ar] 4s^2 3d^{10} 4p^1$ b) $[Ar] 3s^2 3d^{10} 3p^1$
c) $[Kr] 3s^2 3d^{10} 3p^1$ d) $[Kr] 4s^2 3d^{10} 4p^1$

Hints: "Ga" is present at 3rd group and 4th period.

Answer: (d)

173. The threshold frequency for a metal having work function 6.4 eV is:

- (a) 6.4×10^{-19} Hz b) 6.4×10^{-34} Hz c) 1.5×10^{15} Hz d) 1.5×10^{-15} Hz

Hints: $E = hf = \frac{hc}{\lambda}$

Answer: (c)

174. The length of l an arc of a circle in terms of r and θ is

- a) $\frac{r}{\theta}$ b) $r\theta$ c) $\frac{\theta}{r}$ d) None

answer: (b)

175. Li, Na, K ions in acidified solution can best be separated by:

- (a) gas chromatography
(b) gas liquid chromatography
(c) thin layer chromatography
(d) ion exchange chromatography

Answer: (d)

176. The kinetic energy of electron proton alpha particles and neutron is the same. Which one will have the shortest wavelength

- (a) electrons (b) protons (c) alpha particles (d) neutrons

Hints: Of all particles, α particles has greater mass

Answer: (c)

177. If $\sin A + \sin B + \sin C = 3$, then $\cos A + \cos B + \cos C = ?$

- a) 3 b) 2 c) 1 c) 0

Hints: $\sin A + \sin B + \sin C = 3$ only if

$\angle A = \angle B = \angle C = 90^\circ$ and $\cos A + \cos B + \cos C = 0$

Answer: (d)

178. 0.1000 Mole of Na Cl was dissolved in 1.000 dm³ distilled water at 298K. The concentration of resulting solution is:

- (a) 5.85 M (b) 1.00 M (c) 0.1000 M
(d) <0.1000 M

Answer: (c)

179. If the transition from higher energy level ends on energy level 3, the series of the spectral lines emitted is called:

- (a) Balmer's series (b) Lyman's series
(c) Paschen's series (d) Brackett's series

Hints: $n = 3$



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Hints: $p_{\text{toluene}} = X_{\text{toluene}} \times p^{\circ} = p_{\text{toluene}} = \frac{1}{2} \times 22 = 11 \text{ torr}$

Answer: (b)

189. The amount of energy required to break the nucleus into constituent nucleus is called:

(a) ionization energy (b) exaltation energy
(c) binding energy (d) work function

Hints: Binding energy is used to separate nucleon into free state.

Answer: (c)

190. There is no dearth of talent in our country. The underlined word means:

(a) training (b) shortcoming
(c) encouragement (d) shortage

Hints: "Dearth" means shortage of something.

Answer: (d)

191. Which of the following is not a solution of the equation $2x + 3y = 24$?

a) (9,-2) b) (0,+8) c) (12,0) d) (6,4)

answer: (a)

192. What will happen if a block of copper is dropped into a beaker containing a solution of 1.0 M of ZnSO_4 ?

(a) The copper will dissolve with no other change
(b) The copper will dissolve zinc metal will be deposited
(c) The copper will dissolve with the evaluation of $\text{H}_2(\text{g})$
(d) No reaction will occur

Hints: As "Cu" has higher reduction potential than Zn, so Cu cannot replace Zn.

Answer: (d)

193. Radium ${}_{88}\text{Ra}^{226}$ when disintegrates into ${}_{86}\text{Rn}^{222}$ cause the emission of:
a) α - radiation b) γ - radiation c) β - radiation d) cosmic rays

Hints: α - emission reduces A by 4

Answer: (a)

194. In a G.P, if $a_{10} = l, a_{12} = m, a_{16} = n$, then :

a) $ln = m^2$ b) $ln = n^2$ c) $m n = l^2$ d) $m n = l$

Hints: $a_{10} = ar^9, a_{12} = ar^{11}, a_{16} = ar^{15}$
 $l = ar^9 \dots$ (i) $m = ar^{11} \dots$ (ii) $n = ar^{15}$ (iii)
 $ar^9 \cdot ar^{15} = (ar^{12})^2 = m^2$

Answer: (a)

195. Consider the reaction:



(a) K_{eq} increases with increase in temperature

(b) K_{eq} decreases with increase in temperature

(c) K_{eq} increases with increase in temperature

(d) K_{eq} is independence of temperature and pressure

Hints: As reaction is exothermic, K_{eq} increases with decrease in temperature and vice versa.

Answer: (b)

196. The hadrons are

(a) protons (b) neutrons (c) mesons
(d) all

Hints: Hadrons are heavy.

Answer: (d)

197. $\frac{5x+2}{(x+1)(x-2)} = ?$

a) $\frac{1}{x+1} - \frac{1}{x-2}$ b) $\frac{2}{x+1} - \frac{3}{x-2}$ c) $\frac{5x}{x+1} - \frac{2}{x-2}$
d) $\frac{1}{x+1} - \frac{4}{x-2}$

Hints: $\frac{A}{x+1} - \frac{B}{x-2}$ putting $x=1$ for the

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value of A & putting $x=2$ for the value of B.

Answer: (d)

198. A solution is provided which most likely contains carbonate ions. Which of the following would you choose for testing the ions?

(a) H_2S (b) $NaCl$ (c) $CaCl_2$ (d) None

Hints: $CaCl_2 + CO_3^{2-} \rightarrow CaCO_3 + Cl_2$

Answer: (c)

199. The energy stored in 40 m h coil carrying 2 ampere is:

(a) 0.1 J (b) 0.8 J (c) 0.08 J (d) 0.01 J

Hints: $U = \frac{1}{2} LI^2$

Answer: (c)

200. Their hospitality is proverbial. The underlined word means

(a) sensible (b) well-known
(c) exceptional (d) matchless

Hints: the word "proverbial" means "well known"

Answer: (b)

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MEDICAL 2011

S. No	MCQs	
1.	We need _____ guidelines to start with. a. a few b. any c. little d. some Hints: the word guidelines is countable noun which takes "a few" as an appropriate adjective. Answer: (a)	
2.	The angle subtended at the center of a sphere by its surface area is equal to: a) $\frac{4}{3}\pi$ radian b) $\frac{4}{3}\pi$ steradian c) 4π radian d) 4π steradian Hints: $\theta = \frac{s}{r} = \frac{4\pi r^2}{r^2} 4\pi$ steradian. Answer: (d)	
3.	The anion size are larger than its atomic size because: a. the addition of electron occupies more space b. it increases the effective nuclear charge c. the repulsion between electrons increases with the addition of electron d. the attraction between electrons and the nucleus increases Hints: When e ⁻ is added to an atom, repulsion between electrons is increased which increases the size of the atom. Answer: (c)	
4.	Which of the following diseases is NOT caused by bacteria? a. tetanus b. small pox c. tuberculosis d. diphtheria Hints: Rest are bacterial diseases.	B) is viral disease. Answer: (b)
5.	[M ⁰ L ⁰ T] are the dimensions of: a. strain b. refractive index c. magnification d. All of these Hints: strain = $\frac{\text{change in length}}{\text{original length}}$ Refractive Index = $n = \frac{c}{v}$ Magnification = $\frac{\text{size of image}}{\text{size of object}}$ Answer: (d)	
6.	Which one would you class it as more metallic in character? a. As b. Bi c. C d. Sb Answer: (b)	
7.	Round worms, which have body cavities are partially lined with mesoderm are classified as: a. Acoelomate b. Coelomates c. Pseudo coelomates d. Deuterostomes Hints: pseudocoelomate has mesoderm only beneath the ectoderm and it does not surround the endoderm as is the case true coelomate. Answer: (c)	
8.	The magnitude of the resultant of two forces is 2F. If the magnitude of each force is F, Then the angle between these forces is: a. 0° b. 90° c. 120° d. 180° Hints: If vectors are parallel or anti parallel, then they can be added or subtracted like scalar quantities and angle between them is 0° or 180° Answer: (a)	



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- (a) plant hormones (b) carotenoids
(c) plant-enzymes
(d) water present in mesophyll tissue

Hints: Carotenoids are the accessory pigment which not only absorb light but also protect chlorophyll from intense light.

Answer: (b)

125. The SI unit of magnetic flux is weber which is equal to:

- (a) Nm A⁻¹ (b) Nm²A⁻¹(c) NA m⁻¹ (d) Nm A⁻²

Hints: Weber = Tm² = NA⁻¹ m⁻¹ m² = NA⁻¹m

Answer: (d)

126. Ethyne has a total of:

- (a) one σ bond, two π bonds
(b) one σ bond, four π bonds
(c) two σ bonds, four π bonds
(d) three σ bonds, two π bonds

Answer: (d)

127. Malpighian tubules convert nitrogenous waste into

- (a) urine (b) ammonia (c) uric acid
(d) urea

Hints: Main nitrogenous waste in insect is uric acid

Answer: (c)

128. An electron and proton are projected with same velocity normal to magnetic field which one will suffer greater deflection?

- (a) proton (b) electron (c) both will suffer greater deflection (d) None of these

Hints: since $B = \frac{mv}{rq} \Rightarrow B \propto m$

Answer: (a)

129. Choose the correct statement

(a) resonance hybrids are the weighted average of all the resonating forms

(b) resonance hybrids are generally considered as unstable.

(c) resonance hybrids are the average of all the resonance forms

(d) resonance hybrids are averaged of all the less stable resonating forms

Answer: (a)

130. Chlorosis in plants is caused by the deficiency of:

- (a) nitrogen (b) magnesium
(c) potassium (d) both a and b

Hints: Chlorosis is the yellowing of leaves when chlorophyll is not present. It is because N + Mg are component chlorophyll. Deficiency of these element affect chlorophyll formation.

Answer: (d)

131. A good business man should not be unscrupulous while making profits the underlined word means:

- (a) unprincipled (b) careless (c) illegal (d) miserly

Hints: "Unscrupulous" means careless person

Answer: (b)

132. The motional e. m. f depends upon

- (a) strength of magnetic field
(b) length of conductor (c) speed of conductor (d) all of these

Hints: $\epsilon = B v L$, $\epsilon \propto B$, $\epsilon \propto v$, $\epsilon \propto L$, Motional e m f

Answer: (d)

133. carbon-carbon double bond as compared to single bond is:

- (a) less susceptible to oxidation
(b) more susceptible to oxidation



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- Answer: (d)
173. Choose the least inert gas:
(a) Helium (b) Neon (c) argon(d) Xenon
Hints: Least inert means least reactive.
Answer: (d)
174. An inherited characteristic that increases an organism ability to survive and reproduce in its specific environmental is called:
(a) radiation (b) adaptation (c) vestigial organ (d) speciation
Answer: (b)
175. The scattering angle for which the Compton shift in wavelength is equal to Compton wavelength is:
(a) $\theta = 90^\circ$ (b) $\theta = 0^\circ$ (c) $\theta = 45^\circ$ (d) $\theta = 180^\circ$
Answer: (a)
176. Uranium – 235 decays to thorium – 234 by the process of:
(a) fission (b) beta decay (c) alpha radiation (d) gamma radiation
Hints: ${}_{92}\text{U}^{238} \rightarrow {}_{90}\text{Th}^{234} + {}_2\text{He}^4 (\alpha)$
Answer: (c)
177. C.F.C gases are produced from:
(a) Burning of coal (b) burning of charcoal
(c) automobiles engines (d) refrigeration and air conditions
Hints: Chlorofluro carbon. CFS is obtained or released from refrigerator and air condition.
Answer: (d)
178. The uncertainty in energy of photon which is emitted from an atom radiating for 10-8 second is (a) 4×10^{-7}
b) $4 \times 10^{-7} \text{ev}$
c) $6.6 \times 10^{-26} \text{ev}$
d) 4×10^7 Joule
Hints: $\Delta E = \frac{h}{\Delta t} = \frac{6.62 \times 10^{-34}}{10^{-8}}$, $1 \text{ev} = 1.6 \times 10^{-19} \text{J}$ $\Delta E = 6.62 \times 10^{-26} \times \frac{1}{1.6 \times 10^{-19}} 4 \times 10^{-7} \text{ev}$
Answer: (a)
179. The hydrolysis of an ester proceeds most slowly under the condition of:
(a) high acidity (b) high basicity (c) neutrality (d) high temperature
Answer: (a)
180. A woman is homozygous for A–negative blood type. A man has AB–negative blood type. What is the probability that the couple’s child will be type B – negative?
(a) 0 % (b) 25 % (c) 50 % (d) 75 %
Answer: (a)
181. She tried to _____ my question, but I persisted in having an answer.
(a) refrain (b) evade (c) refuse (d) deny
Hints: Evading a question means to ignore a question
Answer: (b)
182. If an atom exists in the excited state $n = 5$, the maximum number of transition takes place is:
(a) 6 (b) 5 (c) 10 (d) 3
Hints: If $n = 5$, $5 \rightarrow 4, 3, 2, 1$, $4 \rightarrow 3, 2, 1$ $3 \rightarrow 2, 1$ $2 \rightarrow 1/10$
Answer: (c)
183. Which one of the following is strongest acid?
(a) FCH_2COOH (b) CH_3COOH
(c) ClCH_2COOH (d) $\text{C}_6\text{H}_5\text{CH}_2\text{COOH}$
Answer: (a)
184. The area where ultraviolet Radiation are intense is the



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- (a) Alpine forests (b) boreal forests
(c) arctic tundra (d) alpine tundra
Answer: (a)
-
185. When the voltage of the target in the X – ray tube increases then the:
(a) penetrating power of x – ray increases
(b) intensity of x – ray increases
(c) wavelength of x – ray increases
(d) all of these
Answer: (b)
-
186. The frequency of light having wavelength 3×10^{-3} cm is:
(a) 1×10^6
(b) 3.0×10^7
(c) 1×10^{10}
(d) 1×10^{13}
Hints: $v = f\lambda$ or $f = c/\lambda = \frac{3 \times 10^8}{3 \times 10^{-3}}$
 1×10^{10}
Answer: (c)
-
187. A bird's wings are homologous to:
(a) fishes tail fin (b) dog's front legs
(c) mosquito's wings (d) alligator's claws
Hints: A bird's wings are homologous to dog's front legs.
Answer: (b)
-
188. The situation in which then excited state i.e. metastable state contains more number of electrons than the ground is called:
(a) ionized state (b) stimulations
(c) population inversion (d) all of these
Answer: (c)
-
189. Which one of the following would you suggest to locate the position of the double bond between carbon atoms in an organic compound?
(a) Addition of Bromine water (b) Addition of HI
(c) Oxidation with ozone (d) All of the above
Hints: The position of double bond can be located by ozonolysis.
Answer: (c)
-
190. Diameter of histone is:
(a) 1 nm (b) 2 nm (c) 3 nm (d) 4 nm
Answer: (b)
-
191. Her _____ lasted for one month. They were the longest wedding celebrations in that area.
(a) rituals (b) matrimonial (c) nuptials (d) rites
Hints: "Matrimonial" means the celebration of a wedding ceremony.
Answer: (b)
-
192. When a radioactive atom decays and its mass number decreases by 4 and charge number decreases by 2 the atom will emit:
(a) α radiation (b) β radiation
(c) γ radiation (d) x – radiation
Answer: (a)
-
193. Most of the oxides of non-metals combine with water to form:
(a) hydrogen gas (b) salt and water
(c) a base (d) An acid
Hints: Nonmetal oxide gives acid with water e. g. $\text{SO}_3 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4$
Answer: (d)
-
194. All of the following are derived from mesoderm except:
(a) Muscles (b) liver (c) gonads (d) Blood vessels
Hints: It is formed from the endoderm
Answer: (b)
-
195. One disintegration per second is equal to



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59. Mercury is 13.6 times as dense as water.
(a) Qualitative (b) Quantitative
(c) Both A and B (d) None of these
60. When sound waves move from one medium to other medium the quantity which remains unchanged is:
(a) Wavelength (b) Frequency
(c) Speed (d) Intensity
61. A cloned baby sheep Dolly was identical to the parent that:
(a) Gave birth to the dolly
(b) Donated reproductive cells
(c) Donated somatic cell
(d) Both A and B
62. What is the ionic strength of 0.01 M Barium Chloride solution?
(a) 0.03 (b) 0.02 (c) 0.04 (d) 0.01
63. When everyone hung _____ the leader picked on the most suitable person to do the job
(a) Out (b) About (c) Back (d) On
64. The two metals having same resistance can be differentiated from their value of:
(a) Resistances
(b) Conductance
(c) Temperature coefficient of resistivity
(d) Conductivity
65. Which one of the following animals has no alimentary canal?
(a) Ascaris
(b) Pin worm
(c) Planaria
(d) Tape worm
66. A group of scientists discovered a new element which gives the properties of inert gases they should place new element in periodic table with the elements of:
(a) s-block
(b) d-block
(c) f-block
(d) p-block
67. The ratio of the capacitance of the capacitor having dielectric to the capacitance of the capacitor having free space is the dielectric:
(a) Relative permittivity (b) Permittivity
(c) Permeability (d) Electric polarization
68. In step up transformer when the alternating voltage increases then the alternating current.
(a) Will increase (b) Will decrease
(c) Will not change (d) None of the above
69. Besides mammalian diaphragm is present in;
(a) Birds
(b) Crocodiles
(c) Fishes
(d) Toads
70. Primary cells are used in calculators for long service life the desirable quality of the cell is:
(a) Low energy densities
(b) No self-discharge rates
(c) High self-discharge rates
(d) High energy densities
71. For the production of electromagnetic waves the charges used are:
(a) Stationary charges
(b) Charges moving with uniform
(c) Accelerating charges
(d) All of the above
72. The formula $\text{CH}_3(\text{CH}_2)_{16}\text{COO}^-\text{Na}^+$



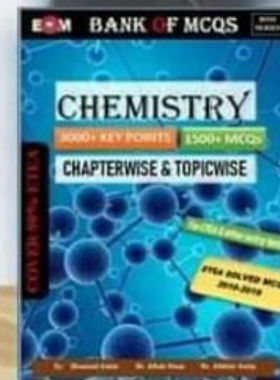
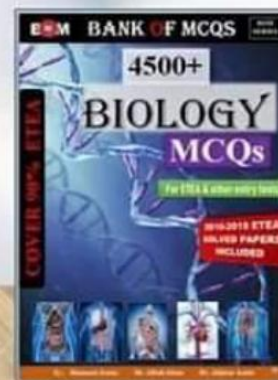
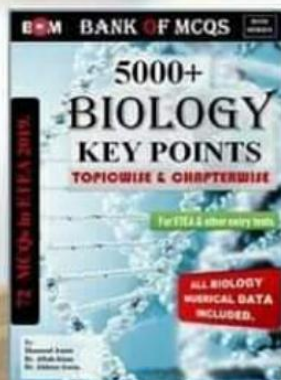
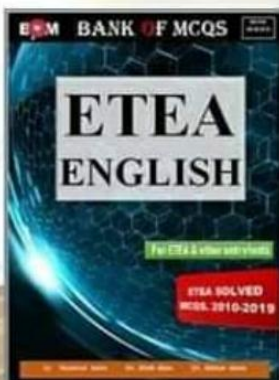
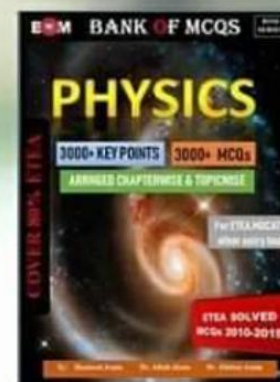
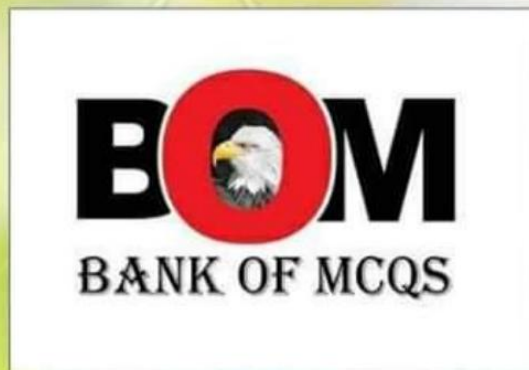
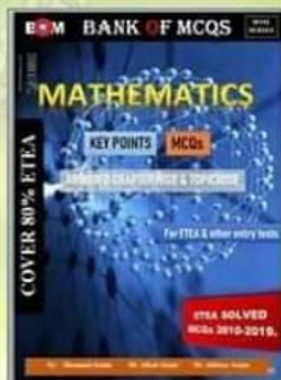
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- represents a member of the class of compound which are known as:
(a) Steroids (b) Soaps
(c) Carbohydrates (d) Vitamins
-
73. All types of plastids are produced from:
(a) Chloroplastids (b) Proplastids
(c) Chromoplastids (d) Leucoplastids
-
74. Which of the following has the same number of electrons as an alpha particle?
(a) H
(b) H₂
(c) H⁺
(d) H₂O
-
75. which of the following groups is considered to have a deactivating effect during aromatic substitution?
(a) -OH
(b) -OR
(c) -NH₂
(d) -CN
-
76. The pilot having a weight of 686N diving down with an acceleration of 9.8m sec⁻² its apparent weight is
(a) 343N (b) 1372 N (c) 686 N (d) Zero
-
77. Sperms of which animal can remain viable for years within the female genital tract?
(a) Ba t (b) Whale (c) Camel (d) Giraffe
-
78. Water has a vapour pressure of 23.75 at 250
c what is the vapour pressure of a solution sucrose if its mole fraction is 0.25?
(a) 15.2 torr
(b) 17.8 torr
(c) 23.8 torr
(d) 29.7 torr
-
79. The maximum drag force on a sphere falling with zero acceleration is 9.8 N its real weight is:
(a) Zero (b) 9.8 N (c) 4.9N (d) 19.6N
-
80. When a body moves against the force of friction on a horizontal plane the work done by the body is:
(a) Negative (b) Positive
(c) Zero (d) Maximum and positive
-
81. All of the following plants possess actinomorphic flowers EXCEPT:
(a) Rose (b) Potato (c) Apple (d) Pea
-
82. The temperature at which the resistance of conductor approaches to zero is calle(d)
(a) Normal temperature
(b) Critical temperature
(c) Absolute temperature
(d) Curie temperature
-
83. Live attenuated vacclines are used to treat all of the following diseases EXCEPT?
(a) Cholera and rabies
(b) Typhoid and plague
(c) Mumps and measles
(d) Yellow fever and rubella
-
84. Reactant formation in an endothermic reaction would befavoured by which of the following?
(a) Increase in temperature
(b) Decrease in temperature
(c) No change in temperature
(d) First increase and then decrease in temperature
-
85. In house circuit all the electric



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- appliances are connected in parallel between main line and neutral line appliances will have.
- (a) Same current
(b) Same power
(c) Different potential and same current
(d) Same potential difference
-
86. Which of the following animals is sedentary in adult and active in larval stage?
(a) Sponge (b) Leech
(c) Salamander (d) Grasshopper
-
87. Chlorofluorocarbons are mainly responsible for:
(a) Air pollution (b) Water pollution
(c) Acid rain (d) Ozone layer depletion
-
88. A body weighs 72 kg on the surface of the earth its weights on the surface of the moon will be:
(a) 72 kg (b) 12kg (c) 24 kg (d) 0kg
-
89. Total confinement of light for propagation in the optical fiber is obtained by:
(a) Total internal reflection
(b) Continuous refraction
(c) Both A and B
(d) None of these
-
90. Food is preserved in the form of glycogen by:
(a) Plants (b) Animals
(c) Cyano bacteria (d) Both B and C
-
91. Hydrolysis of Al_4C_3 gives
(a) CH_4
(b) C_2H_6
(c) C_3H_4
(d) C_4H_2O
-
92. Rashid spoke _____ that he was praised by all the debaters.
(a) Well
(b) As well
(c) Very well
(d) So well
-
93. The temperature scale which is independent of the nature of the working substance is:
(a) Celsius scale
(b) Fahrenheit scale
(c) Centigrade scale
(d) Thermodynamic scale
-
94. Urea formation occurs in:
(a) Kidney (b) Liver (c) Spleen (d) Lungs
-
95. The term Gene was coined by:
(a) Johnson
(b) Corren
(c) Tschmarch
(d) Purkinje
-
96. In which of the following compounds carbon is sp hybridized?
(a) C_2H_6
(b) C_3H_6
(c) C_4H_6
(d) C_4H_8
-
97. The thief ran _____ the street to the other side and hid under the bridge.
(a) Over (b) Across (c) Along (d) Beside
-
98. The angle subtended by a vector $\vec{A} = i - j$ with x-axis is:
(a) 45°
(b) 135°
(c) 225°
(d) 315°
-
99. All of the following are gametophyte plants EXCEPT:
(a) Liver wort (b) Equisetum
(c) Funaria (d) Polytrichum





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8. Ethanol ($\text{CH}_3\text{CH}_2\text{OH}$) and dimethyl ether (CH_3OCH_3) are the best considered as:
(A) Structural isomers (B) Stereo isomers
(C) Enantiomers (D) Diastereomers
Hints: (a) $\text{CH}_3\text{CH}_2\text{OH}$ and CH_3OCH_3 are functional group isomers (Structural isomers) which have the same molecular formulae but different structures.
9. A tertiary carbon is bonded directly to:
(A) 2 Hydrogens (B) 2 Carbons
(C) 3 Carbons (D) 4 Carbons
Hints: © A tertiary carbon is directly bonded with three other carbon atoms.
10. Which derived unit below is equivalent to the SI unit for magnetic field strength, the tesla, T?
(A) Nm/A (B) NA/m (C) N/Am
(D) Am/N
Hints: Because we know that $F = ILB$, $B = F/IL = N/Am$
11. A certain radionuclide decays by emitting an α -particle. What is the difference between the atomic numbers of the parent and the daughter nuclides?
(A) 1 (B) 2 (C) 4 (D) 6
12. A wire of resistance 3.0Ω is stretched to twice its original length. The resistance of new wire will be:
(A) 1.5Ω (B) 3.0Ω (C) 6.0Ω
(D) 32.0Ω
- Hints: Because we know that when length increases the resistance also increase. Therefore $R \propto L$
13. Any DNA molecule having foreign DNA is called:
(A) Mutant
(B) Recombinant
(C) Crossing over
(D) All of the above
Hints: Mutation and crossing over are the process which produce variation or changes in the DNA of the same organism. So mutation and crossing over are the processes not the DNA. Recombinant DNA is that DNA which have a segment of another DNA molecules or a foreign DNA molecules.
14. The theory of uniformitarianism was proposed by:
(A) Hutton and Lyell (B) Lamarck
(C) George Cuvier (D) Darwin
Hints: Hutton and Lyell proposed the theory of uniformitarianism. Lamarck proposed the theory of inheritance of acquired characters, Darwin proposed theory of origin of species by means of natural selection. George Cuvier proposed Catastrophism of natural selection.
15. 'Money Grabbing' implies:
(A) Money saving (B) Money making
(C) Money hunting (D) Money spending
16. —Photo-phosphorylation is:
(A) ATP synthesis by food energy.
(B) ATP synthesis by solar energy.
(C) ATP synthesis by source of water.
(D) ATP synthesis by source of



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(C) Tertiary amines (D) All of these

Hints: (a) primary amines upon warming with chloroform and alcoholic KOH give carbylamines. Carbylamines has an offensive smell. This reaction is given by only primary amines and can be used to distinguish primary amines from secondary and tertiary amines.
 $R-NH_2 + CHCl_3 + 3KOH \rightarrow RNC + 3KCl + 2H_2O$

32. Of the following one particle belongs to lepton group:
(A) Neutrinos (B) Proions
(C) Neutrons (D) Mesons
33. Which of the following physical phenomena cannot be described only by the wave theory of the electromagnetic radiation?
(A) Diffractions (B) Interference
(C) Photoelectric effect (D) Polarization
Hints: (c) The classical electromagnetic wave theory predicts that the energy of photoelectrons should increase with the increases in intensity of incident light and the emission of photoelectrons with the weak intensity of beam of light can take place. But both these predictions are not in agreement with experimental results. In quantum physics, the energy of photoelectrons has no dependence on the intensity of incident light. This prediction is in agreement with experimental results. Hence, the photoelectric effect is not explained by the wave theory of electromagnetic radiation.
34. Which of the following is the same unit as the farad?
(A) Ωs
(B) Ωs^{-1}
(C) $\Omega^{-1} s$
(D) $\Omega^{-1} s^{-1}$

Hints: (c) we know that $C = \frac{Q}{V} = \frac{It}{IR}$
 $= \frac{AS}{A\Omega} = \Omega^{-1} s$

35. A complex form of learning that requires the manipulation of mental concepts to arrive at adaptive behavior is:
(A) Imprinting
(B) Insight learning
(C) Latent learning
(D) Trial & error learning
Hints: Insight learning: Insight learning is that type of learning in which an organism shows correct response to a stimulus which is not seen previously. So the organism used his brain and mental power to show that response.
36. Which of the following is an enzyme lacking disease?
(A) PKU (B) Alkaptonuria
(C) Anuria (D) Dementia
Hints: Phenylketonuria (PKU) is a disease during which an enzyme phenylalanine hydroxylase does not work and phenylalanine which is an amino acid is accumulated in the body.
37. I eagerly look forward _____ seeing you again.
(A) at (B) to (C) on (D) by
38. Acetic acid reacts with methyl alcohol in the presence of acid catalyst to give:
(A) Ethyl formate (B) Ethyl acetate
(C) Methyl formate (D) Methyl acetate
Hints: (d) Acetic acid reacts with methyl alcohol in the presence of acid catalyst to give methyl acetate.



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48. Which of the following substituents is an Ortho and Para director and ring deactivating?
(A) -OH
(B) -NH₂
(C) -Cl
(D) -OCH₃
Hints: (c) is correct because halogen are orthopara directing and ring deactivation species.
49. Which of the following compounds undergoes nitration most readily?
(A) Benzene (B) Toluene
(C) Benzoic acid (D) Nitrobenzene
Hints: (b) because alkyl are orthopara directing so nitration occur easily with toluene.
50. Which of the following is not ferromagnetic substance:
(A) iron (B) cobalt
(C) Nickel (D) Barium
Hints: (d) Intensely paramagnetic substances are called ferromagnetic. They behave like a magnet even after the removal of magnetic field. Iron, cobalt and nickel are ferromagnetic.
51. The sound waves and light waves cannot be both:
(A) polarized (B) Refracted
(C) Reflected (D) Diffracted
Hints: (a) Polarization is a property of waves that can oscillate with more than one orientation. EM waves such as light exhibit polarization, as do some other types of waves, such as sound waves in a gas or liquid do not exhibit polarization since the oscillation is always in the direction the wave travels.
52. Diffraction is the name given to the:
(A) Addition of two coherent waves to produce a stationary wave pattern.
(B) Bending of waves round an obstacle
(C) Change of direction when waves cross the boundary between one medium and another.
(D) Splitting of white light into colours.
Hints: (a)
53. Two forces having magnitudes 3.5N and 5.5N are acting on a body. Which one of the following cannot be the resultant of their possible sum?
(A) 1.5 N (B) 2.5 N (C) 4.5 N
(D) 6.5 N
Hints: (a)
54. Which of the following play role in Biorhythm?
(A) MSH (B) I.H (C) ADH
(D) Melatonin
Hints: Melatonin is a hormone which controls the day / night cycle of living organism. (Biorhythm): Those processes which repeat in the body periodically, annually, seasonally, Monthly, day etc.
MSH: Control the pigmentation (colour of skin)
55. Hypothalamus is a part of:
(A) Diencephalon
(B) Myelencephalon
(C) Metencephalon
(D) Telencephalon
Hints: Forebrain is divided into two parts, telencephalon and



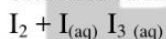
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$$K = \frac{I_{-1}(aq) \text{ in } CCl_4}{I_2 \text{ as } I_{3-1}(aq)} = 1.17 \times 10^{-2}$$

Choose the correct statement about the system

- a) Iodine is extracted from CCl_4 layer by water
- b) Iodine is extracted from aqueous layer by CCl_4
- c) Iodine is more soluble in water than CCl_4
- d) The value of K depends on the amount of iodine added

Hints: (b) Iodine is extracted from aqueous layer by CCl_4 . The distribution is a reversible process and a dynamic equilibrium is established as follow.



107. During the experiment one measured the mass of Mosquito and found it 1.20×10^{-5} Kg. The numbers of significant figures in this case are:

- (A) Five (B) One (C) Two (D) Three

Hints: (c)

108. The vectors A and B are such that $|A + B| = |A - B|$ then the angle between the two vectors is:

- (A) 0°
- (B) 90°
- (C) 60°
- (D) 180°

Hints: (b) $|A + B| = |A - B|$
 $= 90^\circ$

109. If two interozygous tall plants are crossed together the proportion of Phenotypically tall plants will be:

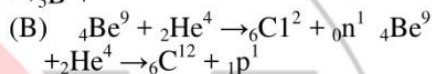
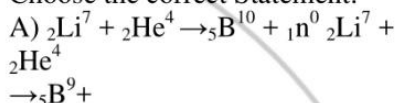
- (A) 50% (B) 25% (C) 75% (D) 100%

Hints:

110. A spore of Fern plant develops into:
(A) Zygote (B) Sporophyte
(C) Gametophyte (D) Prothalus

Hints: The spore of fern develops into gametophytes which again develops into sporophytes to complete the alternation of generation.

111. Choose the correct Statement:



112. Select the correct relation between wave and particle nature of radiation?

- (A) $E = \frac{hc}{\lambda}$
- (B) $E = \frac{hc}{c}$
- (C) $E = \frac{\lambda c}{h}$
- (D) $E = h\lambda c$

Hints: (a) According to pland's theory equation

$$E = hv$$

$$E = hc/\lambda \quad (v = c/\lambda)$$

113. Change in concentration of a reactant is plotted against time and the slope determined. The value of are plotted against (a - x) a straight line is obtained. It may be concluded that the reaction is:

- (A) First order
- (B) Second order
- (C) Third order
- (D) Zero order

Hints: (b) For second order reaction, the plot of dx/dt against



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for the presence of NO, N₂O, NO₂ in the atmosphere is / are:

- (A) Fertilizers
- (B) Biological decay of deadly organism
- (C) Fossil fuel combustion
- (D) All of these

Hints: (c) The main sources of oxides of nitrogen are combustion of fossil fuels (coal, oil and natural gas).

193. Polyhydroxy aldehydes or ketones are known as:
- (A) Carbohydrates
 - (B) Proteins
 - (C) Lipids
 - (D) Vitamins
- Hints: (a) Carbohydrates are polyhydroxy aldehydes and ketones.

194. A shot is fired at an angle of 60° to the horizontal with kinetic energy E. if air resistance is ignored, the kinetic energy at the top of the trajectory is:
- (A) Zero
 - (B) E/8
 - (C) E/4
 - (D) E/2
- Hints: (c)

$$K.E = \frac{1}{2}mv^2$$

$$K.E = \frac{1}{2}m(v_x)^2 = \frac{1}{2}m(v \cos \theta)^2$$

$$K.E = \frac{1}{2}mv^2(\cos \theta)^2 = E(\cos 60^\circ)^2$$

$$= E \times \frac{1}{4} = \frac{E}{4}$$

195. The displacement 'x' of a particle at time 't' is given by $x = 10 \sin 4t$. the particle oscillates with period.
- (A) $\pi/10$ s
 - (B) $\pi/5$ s
 - (C) $\pi/4$ s
 - (D) $\pi/2$ s

Hints: (d) $W = 4, \frac{2\pi}{T} = 4$ or $T = \frac{2\pi}{4}$

$$\frac{\pi}{2} \text{ s}$$

196. By how many times does

doubling the diameter of a wire and making it 10 times longer increase its resistance?

- (A) 2.5 times
- (B) 5 times
- (C) 10 times
- (D) 30 times

Hints: (c) $R \propto L$

197. _____ second thoughts I opted for a cold drink
- (A) At
 - (B) By
 - (C) On
 - (D) For

198. Sucrose is considered as:
- (A) Monosaccharides
 - (B) Disaccharides
 - (C) Polysaccharides
 - (D) None of these
- Hints: Sucrose is a disaccharide made up from two monosaccharides (Glucose + Fructose) So option (b) is correct.

199. High molecular mass compound was hydrolyzed the product was analyzed and found to be amino acid The compound is:
- (A) Protein
 - (B) Lipid
 - (C) Carbohydrate
 - (D) Vitamins
- Hints: Protein is polymer of amino acids held together by peptide linkages.

200. The enzymes functions are optimum at:
- (A) Specific Temperature
 - (B) Specific PH
 - (C) Specific co-enzyme
 - (D) All the above

Hints: Optimum function mean maximum activity which is shown by enzymes at their specific pH, temperature and co-enzymes, Therefore option (d) is correct.

201.

202.



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50. "Incipient" means
(a) In coma due to accidental injury
(b) Just starting to be or happening.
(c) The recipient of gallantry award.
(d) Practitioner of domestic recipes.
-
51. Helium gas is used in filling balloons but not hydrogen, through hydrogen is lighter than helium. Why?
(a) Pure hydrogen is not easily available
(b) Helium is ractive than hydrogen
(c) Helium is chaper than hydrogen
(d) Hydrogen is inflammable.
Hints: H₂ gas is not used in filling balloons because H₂ gas inflammable.
-
52. Electrons are distributed among the orbitals in such a way to give maximum multiplicity (no of unpaired electrons) which is according to:
(a) Pauli exclusion principle
(b) Hund's rule
(c) Aufbau Principle
(d) Octat rule
Hints: Hund's rule gives the maximum number of unpaired elections.
-
53. What is the atomic number of an element that has four unpaired electrons in its ground state?
(a) 6 (b) 14 (c) 22 (d) 56
Hints: Z = 26, |Ar|, 4s², 3d⁶ (4-unpaired es in 3d-orbitals)
-
54. Which of the following sets has closure property with respect to multiplication?
(a) {-1}
(b) {-1, 0}
(c) {0, 2}
(d) {-1, 0, +1}
-
- Hints: Closure property with respect to multiplication. The product of any two elements of a set is also an element of a set.
-
55. The sum of the squares of two numbers is 65 the sum of the numbers is 11 the numbers are
(a) 2,9 (b) 4,7 (c) 3,8 (d) 5,6
Hints: 4, 7: since 4+7=11 and 4²+7²=65
-
56. The reflexive property of equality of real numbers is that
(a) $a = a$ (b) $a \neq a$ (c) $a \leq a$ (d) $a \geq a$
Hints: Reflexive property of equality : $a=a$
-
57. Which experimental tedinlque reduces the Systemati cerror of the quantity eing investigated?
(a) Adjusting an ammeter to remove its zero error before measuring a current.
(b) Measuring several internodal distances on a standing wave to find the mean internodal distance.
(c) Measuring the diameter of a wire repeatedly and calculating the average.
(d) Timing a large number of oscilations to find a period.
-
58. The velocity 'V' of a particle at a displacement 'x' from the origin is give by
 $V = ax^2 + bx + c$ Where a, b and c are constants which of the following statements must be correct for the equation to be homogeneous?
(a) a,b and c must have the same



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- units.
(b) Ax^2, bx and c must have the same units.
(c) A, b and c are constants and have no units.
(d) Ax^2, bx^2 must have units of ms^{-1} but c has no units.
Hints: (d) For equation to be homogeneous, right side dimension must equal to left side dimension.
59. A basketball is thrown upward along a parabolic path. What is the ball's acceleration at its highest point?
(a) 0 (b) $1/2 g$, horizontal
(c) g , downward (d) g , upward
Hints: (c) " g " downward. In projectile motions the only acceleration is " g " which is always downward.
60. Mr. Feroz would rope the dull and wayward students across the knuckles. The italicized idiom means —
(a) Reprove (b) Scold
(c) admire (d) amuse
61. Which of the following is the strongest reducing agent?
(a) Ar
(b) K^+
(c) Cl^+
(d) Ca^{2+}
Hints: Chloride ion (Cl^-) is the strongest reducing agent by losing electron more readily.
62. Which of the following molecules have molecular shape like $AlCl_3$?
(a) NCl_3
(b) BCl_3
(c) PCl_6
(d) PH_3
Hints: Both $AlCl_3$ and BCl_3 have planar trigonal shapes
63. $BeCl_2$ has the hybrid orbital of the type: (a) sp
(b) sp^2
(c) sp^3
(d) dsp^2
Hints: In $BeCl_2$, Be is sp -hybridized and $BeCl_2$ has linear structure.
64. Identity matrix is always:
(a) rectangular (b) symmetric
(c) Singular (d) Non-singular
Hints: Identity matrix is always symmetric and non-singular i.e. both (b) and (d) are correct. Because question is not well settled in original paper.
65. If set A has 3 and set B has 2 elements then how many ordered pairs are there in $B \times A$?
(a) 9 (b) 6 (c) 5 (d) 34
Hints: set A has 3 and set B has 2 elements then $B \times A$ has $2 \times 3 = 6$ elements
66. If $A = \{c, d\}$ and $B = \{e, f\}$ then $\{(c, f), (d, e), (c, e), (d, f)\}$ is
(a) Not a function
(b) an onto function from A into B
(c) An onto function from B into A
(d) On to one function.
Hints: $A = \{c, d\}$ and $B = \{e, f\}$ then $\{(c, f), (d, e), (c, e), (d, f)\}$ is not a function. Since c is paired with two distinct elements.
67. Which of the following statements relating to the Newton's third law is NOT correct?
(a) Action and reaction must be of the same type.



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(b) Action and reaction are always in opposite direction.

(c) Action and reaction are at all times equal in magnitude.

(d) Action and reaction must act on the same body.

68. Which one of the following is not a unit of energy?

(a) kg m s^{-3}

(b) $\text{kg m}^2 \text{s}^{-3}$

(c) N m

(d) W s

Hints: (a) The unit of energy is Joule = $\text{Kgm}^2 \text{s}^{-2} = \text{Nm} = \text{watt s}$

69. A short At an angle of 60° to the horizontal with kinetic energy E. if air resistance is ignored the kinetic energy at the top of the trajectory is:

(a) Zero (b) E/8 (c) E/4 (d) E/2

E/2

Hints: (c) The K.E at top is

$$E' = \frac{1}{2} m(v \cos 60^\circ)^2$$

$$E' = \frac{1}{2} m^2 (v \cos 60^\circ)^2$$

$$E' = E \times \frac{1}{4} = E / 4$$

70. The part of the newspaper in which letters to the editor are published is generally called the agony column. The underlined word most nearly means:

(a) Hilarious jokes (b) gagged problems

(c) Intense excitement (d) acute pain

71. Which of the following is a Lewis acid?

(a) H_2O

(b) NH_3

(c) H^+

(d) Cl^-

Hints: H^+ is electron deficient and can act as a Lewis acid by accepting a pair of electron from a base.

72. Purification of common salt by passing by HCl as is based on:

(a) (b) Common ion effect

(c) Ionization (d) None of these

Hints: During purification of commercial NaCl, solubility of NaCl is decreased by passing HCl gas due to common ion effect and pure NaCl crystallizes out.

73. The formula of Bauxite is:

(a) Al_2O_3

(b) $\text{Al}_2\text{O}_3 \cdot 4\text{H}_2\text{O}$

(c) $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$

(d) $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$

Hints: The formula of bauxite is $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$

74. Let * and o be the two binary operations in a non-empty set S. The operation * is said to be left distributive over o if:

(a) $a * (b \circ c) = (a * b) \circ (a * c)$

(b) $(b \circ c) * a = (b * a) \circ (c * a)$

(c) $a \circ (b * c) = (a \circ b) * (a \circ c)$

(d) $(b * c) \circ a = (b \circ a) \circ (c \circ a)$

Hints: $a * (b \circ c) = (a * b) \circ (a * c)$

75. The matrix $\begin{bmatrix} 0 & 1-2i \\ -1-2i & 0 \end{bmatrix} +$ is :

(a) Hermitian Matrix

(b) Skew Hermitian Matrix

(c) Symmetric Matrix

(d) Skew Symmetric Matrix

Hints: The matrix $\begin{bmatrix} 0 & 1-2i \\ -1-2i & 0 \end{bmatrix}$ is skew Hermitian Matrix. So (b) is correct.

By def $(M)^t = -M$, where M is the



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- (a) $x - 1$ (b) $x - 2$
(c) $x + 2$ (d) $x - 3$

Hints: $(x-2)$ is the factor of
 $x^3 + 2x^2 - 5x - 6$ Since
 $(2)^3 + 2(2)^2 - 5(2) - 6 = 0$ 2 is a root.

85. The quadratic equation having 3, -4 as its roots is:

- (a) $x^2 + x - 12 = 0$
(b) $x^2 - x - 12 = 0$
(c) $x^2 + x + 12 = 0$
(d) $x^2 - x + 12 = 0$

Hints: $x^2 + x - 12 = 0$
 $(x+4)(x-3) = 0$, $x = 4$, $x = 3$

86. Roots of $x^2 - x - 12 = 0$ are:

- (a) unequal and complex
(b) Equal and real
(c) unequal and irrational
(d) Unequal and rational

Hints: Roots of $x^2 - x - 12 = 0$ are unequal and rational since disc:
 $B^2 - 4ac = (-1)^2 - 4(1)(-12)$
 $= 1 + 48 = 49$ a perfect square

87. Two objects of different masses falling freely from the same heights above the earth's surface will experience the same:

- (a) Change in momentum per unit time.
(b) Change in velocity per unit time.
(c) Decrease in gravitational potential energy
(d) Increase in kinetic energy

Hints: (b) Change in velocity per unit time means $a = g$, g is independent of masses.

88. Which one of the following changes when an object moves with simple harmonic motion:

- (a) Angular frequency (b) Total

energy

- (c) Acceleration (d) Amplitude

Hints: (c) As $a \propto x \Rightarrow a \propto c$. Changes during SHM due to changing of displacement from mean positions.

89. A particle oscillates with simple harmonic motion. The acceleration of the particle.

- (a) Decreases as the potential energy decreases.
(b) Is always in the opposite sense to the velocity of the particle.
(c) Varies linearly with the frequency of oscillation.
(d) Has the smallest magnitude when the kinetic energy is the smallest.

Hints: (a) $P.E \propto x^2$ and $a \propto x$

90. The boys loved the zoo. They _____ wild:

- (a) have never seen (b) never saw
(c) had never seen (d) All of the above are correct

91. Liquid crystals have a structure:

- (a) Like liquids
(b) Like crystalline solids
(c) Like amorphous solids
(d) Between solids and liquids

Hints: Liquid crystals have structures and properties in between crystalline solids and liquids.

92. With increase in 10°C temperature, the rate of reaction almost doubles.

The increase is due to:

- (a) Decrease in activation energy of reaction.
(b) Increase in activation energy of reaction.



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- (b) Amplitude
- (c) Square root of the amplitude
- (d) Velocity Squared.

Hints: (a) Energy of waves is directly proportional to amplitude squared ($E \propto a^2$)

100. Some one is walking behind us. I think:

- (a) We are being followed
- (b) We have been followed.
- (c) We are followed.
- (d) We were being followed.

101. A solution of Glucose is 10%. What will be the volume of solution in which one gram mole of it is dissolved?

- (a) 1.0 dm^3
- (b) 1.8 dm^3
- (c) 2.8 dm^3
- (d) 1.5 dm^3

Hints: 10 % glucose solution means 10 g glucose in = 100 mL solution

$180 \text{ g glucose will be in } = \frac{181 \times 100}{10} \text{ mL solution}$
 $= 1800 \text{ mL solution}$
 $= 1.8 \text{ L solution}$
 $= 1.8 \text{ dm}^3 \text{ solution}$

102. The compounds have the same composition and have the same atoms linkages, but with difference orientation in space. The compounds are considered as:

- (a) Stereo isomers (b) Structural isomers
- (c) Position isomers (d) Identical

Hints: Compounds having the same composition same structure but different relative arrangement of

atoms / graphs in space are called stereo isomers.

103. Hydrocarbons are composed of:

- (a) Carbon, hydrogen and oxygen
- (b) Carbon and hydrogen
- (c) Carbon and nitrogen
- (d) Carbon and oxygen

Hints: Hydrocarbons are carbon-hydrogen compounds

104. Sum of first 100 natural numbers =

- (a) 50050 (b) 5005
- (c) 5151 (d) 5050

Hints: Sum of first 100 natural number = 5050

$$\frac{100}{2} (1 + 100) = 5050$$

105. G.M of 4 and 64 is:

- (a) 34 (b) 16 (c) 8 (d) 2

Hints: GM of 4 and 16 is 8

$$\sqrt{4 \times 16} = \sqrt{64} = 8$$

106. If a, b, c are the lengths of the sides of a triangle and $\alpha, \beta,$ are its included angles then

- (a) $\sin \alpha$ (b) $\cos \alpha$ (c) $\cos \beta$ (d) $\cos \gamma$

Hints: $\frac{b^2 + c^2 - a^2}{2bc} = \cos \alpha$: Law of cosines

107. A wave front of a progressive wave is one. Where every point on it:

- (a) Is vibrating with the same frequency.
- (b) Is moving in the same direction.
- (c) Is vibrating in phase with the other points.
- (d) moves with the same speed.

Hints: (c) wave front is the locus of all points in the medium having same phase with all the points.



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Hints: First find center of the circle which is the common point of the two diameters $x+y=6$ and $x+2y=4$, then find the distance between, the center and the point lying on the circle (6,2).

As a result we get the radius $\sqrt{20}$

117. Sound waves of frequency 100 Hz are transmitted into a cylindrical tube that is closed at one end. The stationary waves formed in the tube produced adjacent nodes that are 1.5 m apart. What is the speed of sound waves?

- (a) 6.5 m s^{-1}
(b) 160 m s^{-1}
(c) 320 m s^{-1}
(d) 640 m s^{-1}

$$\frac{\lambda}{2} = 1.6\text{m} \Rightarrow \lambda = 3.2\text{m}$$

Hints: (c)

$$V = \lambda f = 3.2 \times 100 = 320\text{ms}^{-1}$$

118. A positive charge of magnitude 4.0×10

-6C is placed at a point in an electric field where the potential is $+1.0 \text{ kV}$. What is its electric potential energy?

- (a) $4.0 \times 10^{-9}\text{J}$
(b) $4.0 \times 10^{-3}\text{J}$
(c) $4.0 \times 10^{-6}\text{J}$
(d) $2.5 \times 10^8\text{J}$

Hints: (b)

$$V = \frac{W}{q} \Rightarrow W = qV$$

$$W = E = 4.0 \times 10^{-6} \text{ C} \cdot 1.0 \times 10^3 \text{ V} = 4 \times 10^{-3}\text{J}$$

119. When the separation r between a positive test charge and a positive point charge is increased the electric force F acting on the test charge is:
- (a) Directly proportional to r

- (b) Inversely proportional to r
(c) Directly proportional to r^2
(d) Directly proportional to $1/r^2$

Hints: (d) Force between two charges is

$$F = k \frac{qq_0}{r^2}, F \propto \frac{1}{r^2}$$

Force is directly proportional to $\frac{1}{r^2}$

120. If you _____ well for the entrance test, you would have scored a lot:

- (a) studied (b) had studied
(c) would studied (d) will study

121. Which of the following hydrocarbons has acidic hydrogen?

- (a) 1-Butyne (b) 2-Butyne
(c) 2-Butene (d) 1-Butene

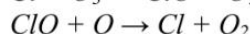
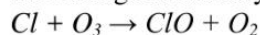
Hints: A H-atom attached to triple bonded carbon is partial +vely charged and can be removed as proton. Hence 1-alkynes

(1-Butyne) have acidic H-atoms and show acidic behaviour.

122. Select the compound that is considered as causing more depletion of ozone layer in the upper stratosphere:

- (a) CH_4
(b) CF_4
(c) CH_2Cl_2
(d) CCl_2F_2

Hints: CCl_2F_2 Causes more depletion of ozone layer. Chlorofluorocarbons are used in refrigerants and as aerosol sprays etc. These produce chloride free radicals in stratosphere by the action of UV radiations. The chloride free radicals react with ozone and change it into oxygen.





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182.

What is the acceleration of a falling stone whose velocity increases from 80 m/s to 100 m/s in 2 seconds?

- A) 0.10 m/s² B) 10 m/s²
C) 100 m/s² D) 90 m/s²

183.

The equation of the circle whose center is the origin and radius is 3 units is:

- A) $x^2 + y^2 = 3$ B) $x^2 - y^2 = 3$
C) $x^2 + y^2 = 9$ D) $x^2 - y^2 = 9$

184.

Aluminum from scrap metal is extracted by solvent extraction technique by using the liquid:

- A) Dichloro diethyl ether B) Ethanol
C) Phenol D) Mercury

185.

A certain radionuclide decays by emitting an α -particle. What is the difference between the atomic numbers of the parent and the daughter

- A) 1 B) 2
C) 4 D) 6

186.

Equation of the ellipse is :

- a) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
b) $\frac{a^2}{x^2} + \frac{y^2}{b^2} = 1$
c) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
d) $\frac{x^2}{a^2} + \frac{b^2}{y^2} = 1$

187.

The best technique for detecting narcotics in blood is:

- A) Solvent extraction B) Distillation
C) Chromatography D) All of the above

188.

If the mass of a moving body is doubled, the inertia of the body will be:

- A) Half as great as its original value
B) Four times as great as its original value
C) Unchanged from its original value
D) Twice as great as its original value

189.

Equation of the normal at the point (x_1, y_1) to the parabola $y^2 = 4ax$ is:

- A) $Yy_1 = 2a(x + x_1)$ B) $Y - y_1 = \frac{y_1}{2a}(x - x_1)$
C) $Y + y_1 = \frac{y_1}{2a}(x + x_1)$ D) $Yy_1 = 2a(x - x_1)$

190.

Which one of the following compounds has the shortest carbon-halogen bond?

- A) CH_3F B) CH_3Cl
C) CH_3Br D) CH_3I

191.

'HAVE CLEAN HANDS' implies:

- A) Wash one's hands B) Go for corruption
C) Not being guilty D) Prepare for prayers

192.

If the speed at which a car is traveling is tripled, by what factor does its kinetic energy increase?

- A) $\frac{1}{2}$ B) 3
C) 6 D) 9

193.

The conic having eccentricity $e > 1$, is called:

- A) Hyperbola B) Ellipse
C) Parabola D) Asymptotes



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D) Momentum, electric intensity, density, magnetic flux.

27. Number of chromosomes in Tobacco is:
A) 45 B) 48 C) 46 D) 47
28. How many molecules are present in 0.20 g of Hydrogen gas?

28. How many molecules are present in 0.20 g of Hydrogen gas?

A) $\frac{0.10}{1.00n} \times 6.02 \times 10^{23}$ B) 0.20×2.016

C) $\frac{0.20}{2.016} \times 6.02 \times 10^{23}$ d) $\frac{1.00n}{0.20} \times 6.02 \times 10^{23}$

Hints: for number of particles we have $N = n \times N_A$ (1)

But $n = \text{mass} / \text{molar mass}$ in this case

$N_{H_2 \text{ molecule}} = 0.20 / 2.016 \times 6.023 \times 10^{23}$

(molar mass of $H_2 = 2 \times 1.008 = 2.016$)

29. A generator produces 100 kW of power at a potential difference of 10KV. The power is transmitted through cables of total resistance 5Ω. How much power is dissipated in the cables?

A) 50 W B) 750 W C) 500 W D) 1000 W

$p = I^2 r$

Hints: $p = (10^2)^2 \times 5$

$P = 500 \text{ watt}$

30. I keep the butter in the fridge. Select the correct passive voice:
A) In the fridge the butter is kept by me.
B) By me is the butter kept in the

fridge.

C) The butter is kept by me in the fridge.

D) kept in the fridge by me is the butter

31. Appendix is vestigial in man but may play role in:

A) Digestion B) Excretion
C) Immunity D) Movement

Hints: appendix is vestigial in man but may play role in digestion, it is said that it secretes some digestive.

32. In the nuclear reaction ${}_{87}^{233}\text{Fr} \rightarrow {}_{88}^{233}\text{Ra} + x$, particle x is:

A) A neutron B) A proton

C) An electron D) An alpha particle

${}_{87}^{233}\text{Fr} \rightarrow {}_{88}^{233}\text{Ra} + x$, this is beta decay

Hints: ${}_{87}^{233}\text{Fr} \rightarrow {}_{88}^{233}\text{Ra} + \beta^-$

33. A body of mass moves at constant speed v for a distance s against a constant force f what is the power required to sustain this motion?

A) $p \cdot v$ B) $\frac{1}{2} mv^2$ C) $\frac{1}{2} Fs$ D) Fs

Hints: $p = \frac{w}{t}$, $p = \frac{fs}{t}$ $p = f \cdot v$

34. A single molecule of hemoglobin is composed of:

A) Three polypeptide chains

B) Four polypeptide chains

C) Five polypeptide chains

D) Six polypeptide chains

Hints: A single molecule of haemoglobin is composed of four polypeptide chain.

Some protein like insulin has two



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correctly expresses this result?

- A) 50 mA B) 50 MA
C) 500 mA D) 500 MA

Hints: $0.5A = \frac{0.5}{10} \times 1000$
 $= 500mA$

44. Spiders belong to class:
A) Crustacean B) Myriapoda
C) Arachnida D) Hexapoda
Hints: spiders belongs to the Arachnida. Arachnids have four pairs of legs.
45. Which one of the following; compounds participates in hydrogen bonding?
A) CH₃ Cl B) CH₃ OCH₃
C) CH₃ NH₂ D) C₆ H₅ OCH₃
Hints: chlorine connect from hydrogen bonding in director ether and ethyl methyl ether oxygen is not available for hydrogen bonding in methyl amine the N g one molecule in from H-bond with H of other molecule.
46. If a body of mass m is released in a vacuum just above the sun face of a planet of mass M and radius R . what would be its gravitational acceleration?
a) $\frac{Gmm}{n}$ b) $\frac{Gmm}{R^2}$ c) $\frac{Gm}{R}$ d) $\frac{Gm}{R^2}$
Hints: $W = \frac{Gmem}{R^2}$, $mg = \frac{Gmem}{R^2}$ $g = \frac{Gme}{R^2}$
47. Polysaccharide cellulose is the building material of:
A) Primary cell-wall B) Secondary cell-wall
C) Middle lamella D) Plasma membrane

48. Which of the following structure has a bond formed by an over of SP^2 hybrid orbital with that of SP hybrid orbital?
A) HC = CH B) H₂C = CH₂
C) H₂C = C = CH₂ D) CH₂ = CHCH₃
Hints: carbon of CH₂ is SP^2 hybridized while the middle carbon has SP hybridization
49. The first law of thermodynamics is a statement which implies that:
A) No heat enters or leaves the system
B) The temperature remains constant
C) All work is mechanical
D) Energy is conserved
Hints: the first law of thermodynamics is also called law of conservation of energy
 $\Delta Q = \Delta u + \Delta w$
50. GET HOLD OF ONESELF
Implies:
A) To start running B) To catch a thief
C) To become calm D) To feel exhausted
51. Lobsters belong to class:
A) Myriapoda B) Arachnida
C) Hexapoda D) Crustacean
Hints: lobsters belongs to class crustacean which are more in animals with two pincer-like claws
52. The bond angle between H - C - C bond in ethane is:
A) 109.5 B) 120
C) 90 D) 107.5



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Hints: in alkanes carbon is sp^3 hybridization. Since bond angle between C-C in sp^3 hybridization is 109.5° . so the ethane has an angle of 109.5° between C-C

53. the function of a main transformer is to convert:
A) one direct voltage to another direct voltage of different magnitude.
B) one alternating voltage to another alternating voltage of different magnitude.
C) a high value alternating voltage to low value direct voltage.
D) A high value alternating current to low value direct voltage
54. Pigeon odour is released from the water bloom of:
A) Slime mold B) Water mold
C) Cyanobacteria D) Cyanobacteria Algae ponds
55. What will be the product when PCT^5 reacts with acetic acid?
A) CH_3CI B) CH_3COCI
C) CH_3COCI_2 D) CH_3CH_2COCI
Hints: $CH^3COOH + PCT^5 \rightarrow CH^3COOCI + POCl^3 + HCl$
56. When monochromatic light of wavelength $5.0 \times 10^{-7} m$ is incident normally on a plane diffraction grating, the second order diffraction lines are formed at angles of 30° to the normal to the grating. What is the number of lines per millimeter of the grating?
A) 250 B) 500 C) 1000 D) 4000
Hints: $d \sin \theta = m\lambda$ $d = \frac{m\lambda}{\sin \theta}$

$$d = \frac{2 \times 5.0 \times 10^{-7}}{\sin 30} = 20 \times 10^{-5} = 20 \times 10^{-7}$$

$$\text{as } N = \frac{L}{d} = \frac{1}{20 \times 10^{-5}} = 0.05 \times 10^{-7}$$
$$N = 500$$

57. Brunner's glands are found in:
A) Stomach B) Duodenum
C) Ileum D) Colon
Hints: Brunner, s glands are found in duodenum.
58. Which type of isomerism is being exhibited by $FCH = CHF$?
A) Chain isomerism B) Structural isomerism
C) Geometrical isomerism D) Position isomerism
Hints: geometric isomerism is exhibited by compounds containing multiple bonds
59. During the experiment one measured the mass of mosquito and found it $1.20 \times 10^{-5} kg$. the number of significant figures in this case is:
a) Two b) three c) five d) one
60. Select the correct sentence:
A) My feet seemed hardly to touch the earth.
B) My feet hardly seemed to touch the earth.
C) Hardly my feet seemed to touch the earth.
D) My feet seemed to touch the earth hardly
61. An organism that adopts saprophytic mode of nutrition during part of its life is called:
A) Facultative saprophyte B) Facultative parasite



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- b) $\frac{1}{2} CV$
- c) $\frac{1}{2} C^2V$
- d) $\frac{1}{2} QV^2$

104. The birds excrete:
A) Ammonia B) Urea
C) Uric acid D) Acetic acid
The birds excrete uric acid, the white paste in the faeces of birds is uric acid is an adaptation in those animals which drink little water or who lives in such areas which have scarcity of water.

105. Which electronic sub-shell do the Lanthanides have incompletely filled?
A) 3f B) 4f C) 5f D) 6f
Hints: lanthanides and actinides are called f- block element because they have incompletely filled 4f sub-shell.

106. Write has a resilience 'it'. If its length is doubled and radius is reduced to half then its resistance will become:
A) 2R B) 4R C) 8R D) 16R
$$R = \frac{\rho l}{A}, \frac{\rho 2l}{\pi r^2} = 2\pi 4\left(\frac{\rho l}{\pi r^2}\right)$$

Hints: $R = 8R$

107. Bulliform cells are present in:
A) Grasses B) Underground stems
C) Fruit-nuts D) Cabbage leaves
Hints: bulliform cells are present in epidermis. In dry weather the bulliform cells loss water due to which the rolling of leaves occurs in grasses.

108. How many different values can m, assume in the electron sub-shell designated by quantum number $n=5, l=4$?

- A) 4 B) 5 C) 6 D) 9

Hints: $n=5, l=4$ then $m = 2l + 1 = 2(4) + 1 = 9$

It means that it is f sub-shell which has no values for m
 $M = -3, -2, -1, 0, +1, 2, 3$

109. The potential difference between a pair of similar and parallel conducting plates is known. What additional information is needed in order to find the electric field strength between the plates?

- A) Separation of the plates.
B) Separation and area of the plates.
C) Permittivity of the medium; separation of the plates.
D) Permittivity of the medium; separation and area of the plates

Hints: $v=ED, E = v/d$

110. Please help someone the house islife.

- A) At B) In C) On D) By

111. Bone is surrounded by a membrane called:

- A) Perichondrium B) Protoplum
C) Perimyeium D) Periostium

Hints: bone is surrounded by a membrane which is called periosteum. Contain blood vessels and nerves .

112. Which of the following is Hypochlorous acid?

- A) HClO B) HClO₂ C) HClO₃
D) HClO₄



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Hints:

HOCI _____ hypochlorous acid

HOCI₂ _____ chlorous acid

HOCI₃ _____ clonic acid

HOCI₄ _____ perchloric acid

113. A capacitor which has a capacitance of 1 farad will:

A) Be fully charged in 1 second by a current of 1 ampere

B) Store 1 coulomb of charge at a potential difference of 1 volt.

C) Gain 1 joule of energy when 1 coulomb of charge is stored on it.

D) Discharge in 1 second when connected across a resistor of resistance 1 ohm.

Hints: $Q=CV, C=Q/V$

114. A hormone that prevents senescence in leaves, is:

A) Auxin B) Gibberellins

C) Cytokinin D) Absciscic acid

Hints: a hormone that prevents senescence in lives is cytokinines.

This action is performed by the activation of protein synthesis

115. If 20.0 cm³ of 0.5 M solution is diluted to 1.0 dm³. What will be its new concentration?

A) 0.00.1 M B) 0.01 M C) 1.0 M

D) 10.0 M

Hints: as we have $M_1 V_1 = M_2 V_2$ ----

--(1)

$M_1 = 0.5 \text{m} \quad v_1 = 20 \text{cm}^3 = 0.02 \text{ dm}^3$

$V_2 = 1 \text{dm}^3 \quad m_2 = ?$

From equation 1 $m_2 = \frac{m_1 v_1}{v_2} =$

$$\frac{0.5 \times 0.2}{1} = 0.01 \text{m}$$

116. The internal energy of a fixed mass of an ideal gas depends on:

A) Pressure, but not volume or temperature.

B) Temperature, but not pressure or volume.

C) Volume, but not pressure or temperature.

D) Pressure and temperature, but not volume

117. Messer's capsules are the receptors for:

A) Temperature B) Pain

C) Pressure D) Touch

Hints: Messer's capsules are the receptors for touch. These are the nerre endings of sensory neurons which are encapsulated.

118. Which one of the following oxides exhibit amphoteric properties?

A) K₂O B) Mg O C) Zn O D) Ca O

Hints: k₂o, mg o and ca o are basic while z n o is amphotic

$Zn o + h_2 so_4 \rightarrow z n so_4 + h_2o$

$Zn o + 2naoh + h_2o \rightarrow na_2(zn(oh)_4)$

119. A spring obeying Hook's law has an unstretched length of 50 mm and a spring constant of 400 Nm⁻¹.

What is the tension in the spring when its overall length is 70mm?

A) 8.0 N B) 28 N C) 160 N D) 400 N

Hints: $F = K x, F = 400 \times 0.02, F = 8 \text{N}$

120. 'CRANKY SPOUSE' implies:



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C) $2n \text{ ms}^{-1}$ D) $4n^2 \text{ ms}^{-2}$
Hints: $2\text{C}_2\text{H}_5\text{OH} + 2\text{Na}$

130. Select the correct sentence:

- A) Farid and Javed both are good swimmers.
- B) Both Farid and Javed are good swimmers.
- C) Good swimmers are Farid and Javed both.
- D) Swimmers are good both Farid and Javed.

131. Which one of the following animals is viviparous?

- A) Rat B) Kangaroo
 - C) Duckbilled platypus D) Spiny ant eater
- Hints: Rat is the viviparous animal which give birth to young ones because rat belong to the sub-class mammalian and give birth to young ones.

132. According to molecular orbital theory which one of the following will indicate two unpaired electrons?

- A) N_2 B) O_2 C) F_2 D) Hc^{2+2}

Hints: MOT diagram of O_2 molecule shows that it has two unpaired electrons in antibonding molecule orbitals. That is why O_2 molecule is paramagnetic.

133. An alternating current i/A varies with time t/s according to the equation $i = \sin(100\pi t)$. What is the maximum power developed by the current in a resistive load of resistance 100Ω ?

- A) 125 W B) 160 W C) 250 W

D) 500 W

Hints: $P = I^2 R$, $P = 250 \text{ W}$

134. Cristae of mitochondria are the sites of:

- A) Electron transport chains
- B) Photophosphorylation
- C) Krebs cycle
- D) Glycolysis

135. Which one of the following compounds will show covalent bonding?

- A) CaF_2 B) MgO C) KCl D) SiH_4

Hints: Since all the compounds listed are ionic in nature, because they are formed from combination of metal and nonmetal. SiH_4 is covalent because both Si and H are nonmetals.

136. The rate of change of momentum of a body falling freely under gravity is equal to its:

- A) Impulse B) Kinetic energy C) Power D) weight

137. Muscles develop from:

- A) ectoderm B) mesoderm
- C) endoderm D) all of the above

Hints: Muscles are developed from mesoderm during the developmental processes of young ones.

138. Which one of the following has a covalent bonding by the overlap of sp^3 hybridized orbital with p orbital/s?

- A) BF_3 B) H_2O C) BeCl_2 D) NH_3
- Hints: BeCl_2 has linear structure so beryllium is sp hybridized. sp hybridized orbitals of Be overlap with p orbitals of two chlorine



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atoms to Be Cl₂

Cl-Be-Cl

H₂O and NH₃ have s p³ hybridized while BF₃ has s p³ hybridization

139. Radioactive activity is affected by:
A) Temperature B) Pressure
C) Humidity level D) None of the above

140. An 'ELEGY' is a poem written:
In the memory of a little child
On the sighting of an old tutor
In the love of dear sweetheart
On the death of someone dear

141. Bacteria maintain their survival by the formation of:
A) Hormogonia B) Alkinets
C) Endospores D) Zygosporangia

142. The change in enthalpy at constant pressure, ΔH is equal to:
A) $\Delta H = q + P\Delta V$ B) $\Delta H = \Delta E - P\Delta V$
C) $\Delta H = \Delta E + P\Delta V$ D) $\Delta H = q - P\Delta V$

Hints: Enthalpy is heat content at constant at constant pressure
 $\Delta H = q_p = \Delta E + p\Delta v$

143. Four gas molecules have the speed 8.0 ms⁻¹, 6.0 ms⁻¹, 6.0 ms⁻¹ and $\sqrt{8}$ ms⁻¹. What is their root-mean-square speed?
A) 8.0 ms⁻¹ B) 6.0 ms⁻¹
C) 5.0 ms⁻¹ D) 7.0 ms⁻¹

Hints: $\sqrt{6^2 + 8^2} = 10$ Since 2010

144. Avery, Macleod and McCarty repeated the Griffith experiment in the year:
A) 1869 B) 1928 C) 1944 D) 1952

Hints: Avery, Macleod and McCarty repeated the experiment of Griffith in 1944. The experiment was about the transforming principle, that DNA is the hereditary material

145. Considering the standard reduction chart, the strong reducing agent value is:

- A) Small negative values
B) Large negative values
C) Small positive values
D) Large positive values

Hints: the more negative value of standard reduction potential in electrochemical series indicates the strong reducing agent.

e. g. $Li^+ + e^- \rightarrow Li$ $E^\circ = -3.05V$

$K^+ + e^- \rightarrow K$ $E^\circ = -2.92V$

Here Li is strong reducing agent than K.

146. An organ pipe of length T has one end closed but the other end open. What is the wavelength of the fundamental node emitted?
a) Slightly smaller than $\frac{T}{4}$.
b) Slightly larger than $\frac{T}{4}$.
c) Roughly equal to $\frac{3T}{4}$.
d) Slightly larger than $\frac{T}{2}$

147. Microvillae are also called:
A) Leaf veins B) Cristae
C) Capillaries D) Leaf midribs

148. Which statement is correct while recharging the automobile battery?
A) Pb is converted to PbO₂.
B) PbSO₄ is converted to Pb.
C) Pb is converted to PbSO₄
D) None of the above



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by genetic engineering is called transgenic in which the productive genes of interest are manipulated and the unwanted genes are removed.

164. A plant or animal modified by genetic engineering is called:
A) Transgenic B) Probe
C) Recombinant D) Plasmid
Hints: A plant or animal modified by genetic engineering is called transgenic in which the productive genes of interest are manipulated and the unwanted genes are removed.

165. Ethylene diamine tetraacetate ion (EDTA) is a polydentate ligand it bonds to central metal atom through:
A) Two of its atoms B) Three of its atoms
C) Four of its atoms D) Six of its atoms
Hints: EDTA (Ethylene diamines tetraacetate) is a hexadentate ligand which links to central metal atom through six atoms.

166. A source contains initially N_0 nuclei of a radioactive nuclide. How many of these nuclei have decayed after a time interval of three half-lives?
A) $N_0/8$ B) $2N_0/3$
C) $N_0/3$ D) $7N_0/8$
$$\frac{N_0}{2} + \frac{N_0}{4} + \frac{N_0}{8}$$

Hints: $= \frac{7N_0}{8} +$

167. When the entire body of a bacterium is covered by flagella,

such a bacterium is called:

- A) Atrichous B) Lopho-trichous
C) Lampi trichous D) Peri-trichous

168. Phosphorus trihalides are readily hydrolysed as shown below:
 $PX_3 + 3H_2O \rightarrow H_3PO_3 + 3HX$
Generally moving from fluorine to iodine rate of hydrolysis:
A) Increases B) Decreases
C) Remains unchanged
D) First increases and then decreases

Hints: generally hydrolysis of phosphorus trihalides increases with the increase in atomic number and decrease in the electronegativity of the elements from fluorine to Iodine
The rate of hydrolysis is given
 $PO_3 > PBr_3 > PCI_3 > PF_3$

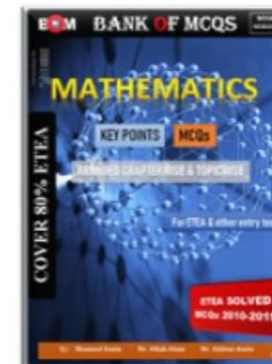
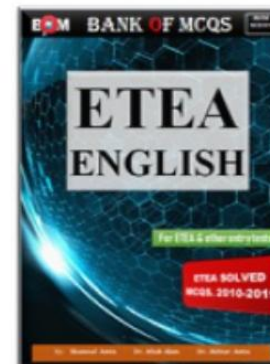
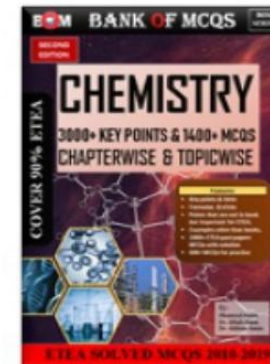
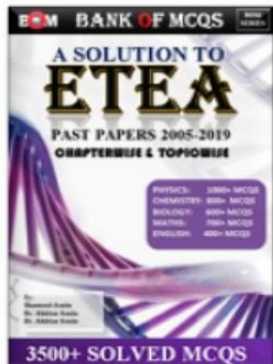
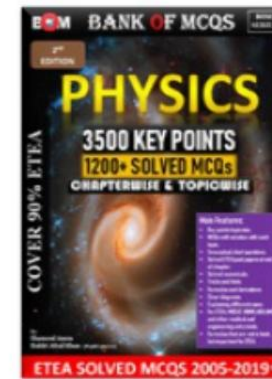
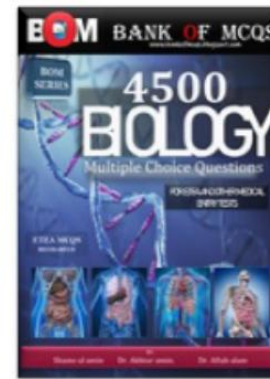
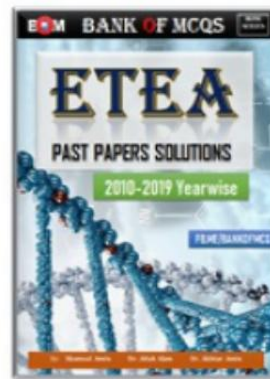
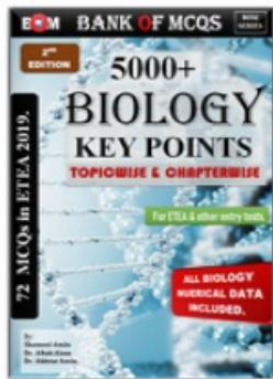
169. Two monochromatic radiations X and Y are incident normally on a diffraction grating. The second order intensity maximum for X coincides with the third order intensity maximum for Y. what is the ratio $\frac{\text{wavelength of } X}{\text{wavelength of } Y}$?
A) $1/2$ B) $2/3$ C) $3/2$ D) $2/1$

170. Select the correct sentence:
A) Certainly she is the best person for the job.
B) She is the best person for the job certainly.
C) She is certainly the best person for the job.
D) The best person certainly she is for the job.

171. Nucleus was discovered by:
A) Waldyne B) T.H. Margan

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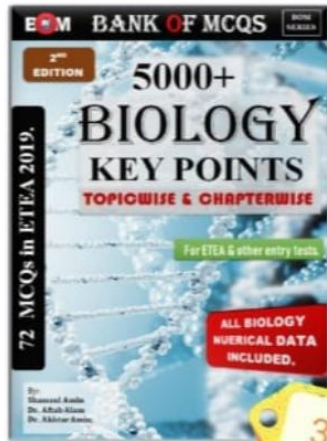
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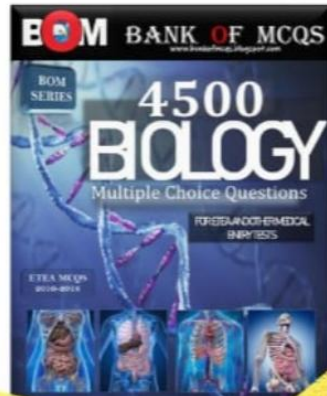
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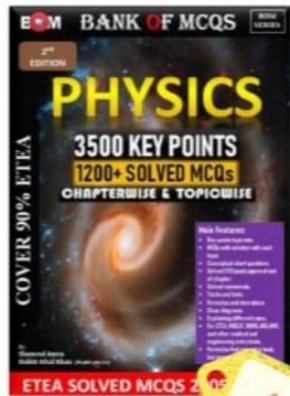
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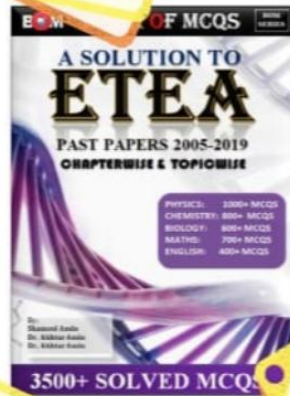
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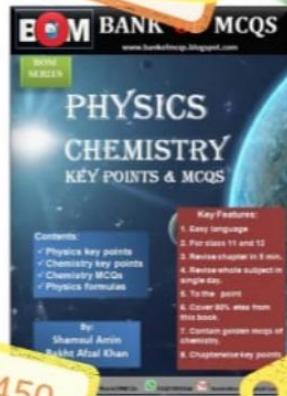
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450



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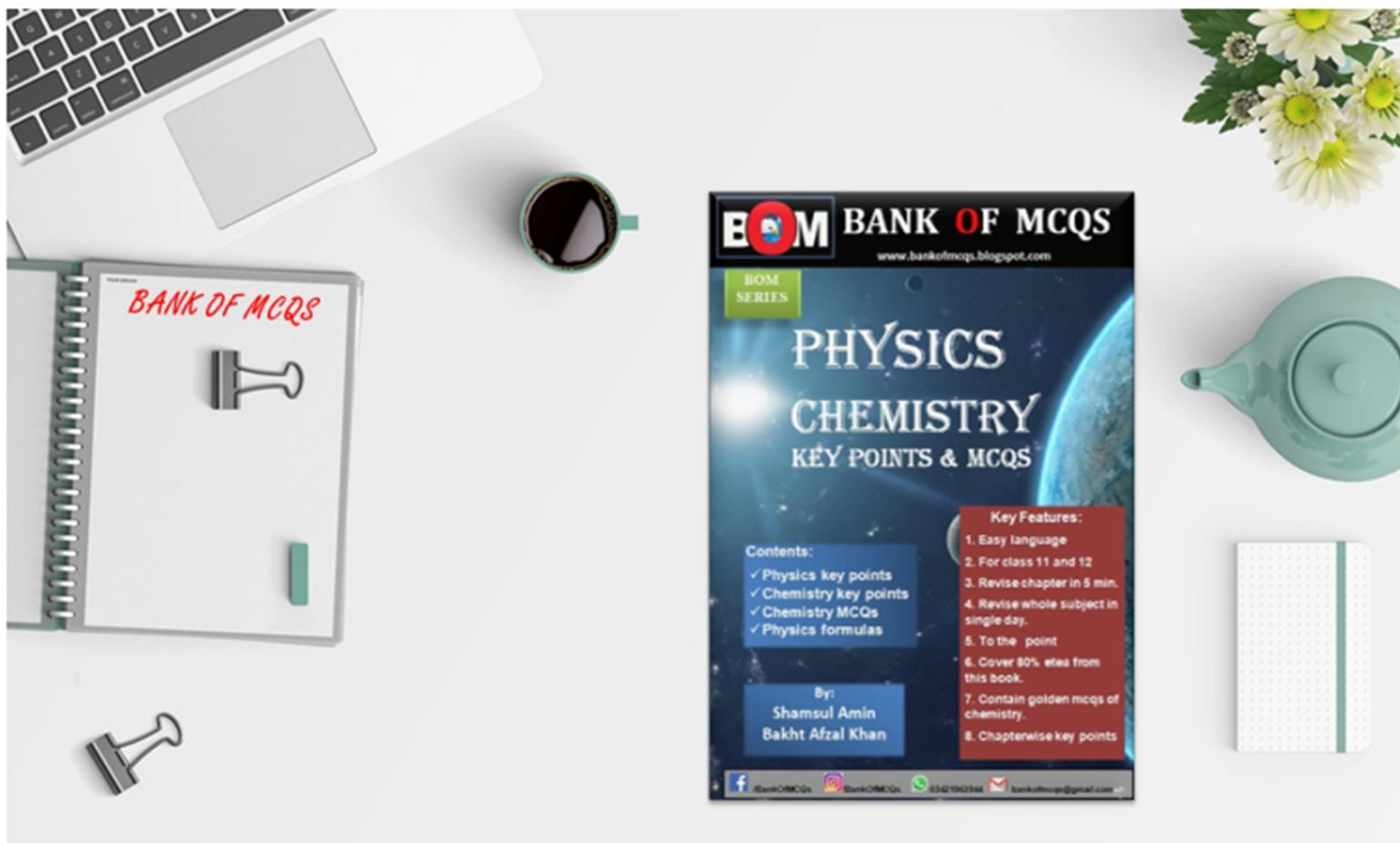


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- Answer: (a)
17. The atoms A and B have the electronic configuration:
A = $1s^2 2s^2 2p^6 3s^2$ B = $1s^2 2s^2 2p^4$
(a) AB (b) A_2B (c) AB_2 (d) A_2B_2
Hints: A_2B . As A is monovalent while B is divalent.
Answer: (b)
18. $\frac{d}{dx} \sin^{-1} x = ?$
a) $\frac{1}{\sqrt{1+x^2}}$
b) $\frac{1}{\sqrt{x^2-1}} \quad \forall x \in \mathbb{R}$
c) $\frac{1}{\sqrt{1+x^2}}$
d) $\frac{1}{\sqrt{1-x^2}}$
Hints: (b)
19. A photon is:
(a) a charged particle (b) an electron-positron pair
(c) a quantum of electromagnetic radiation
(d) neutron
Hints: photon is discrete packet of energy, also called quanta, plural quantum's
Answer: (c)
20. There are _____ fish in this pond.
(a) much (b) any (c) more (d) many
Hints: word "fish" is in need of suitable adjective. Fish is uncountable noun and "much" is the proper adjective to complete the sentence.
Answer: (a)
21. Choose the correct statement:
(a) crystalline solids are usually anisotropic but liquid crystals are isotropic.
(b) crystalline solids are usually isotropic but liquid crystals are anisotropic.
(c) liquid crystals have both isotropic and anisotropic properties
(d) liquid crystals are devoid of isotropic and anisotropic properties.
Hints: liquid crystal have both the properties of liquid and solid.
Answer: (a)
22. Straight lines represented by $ax^2+2hxy+by^2=0$ are perpendicular if:
(a) $h^2=ab$ (b) $ab < h^2$ (c) $h^2 < ab$
(d) $a+b=0$
Hints: $a+b=0 \Rightarrow \tan \theta = \frac{2\sqrt{h^2-ab}}{a+b} = \infty$, $\tan^{-1}(\infty) = \frac{\pi}{2}$
Answer: (d)
23. For a noninverting amplifier the gain is given by
a) $G = 1 + \frac{R_1}{R_2}$
b) $G = \frac{1+R_1}{R_2}$
c) $G = \frac{R_1}{R_2}$
d) $G = -(\frac{R_1}{R_2} + 1)$
Answer: (a)
24. Which is not used as desiccant?
(a) Silica gel (b) $CaCl_2$ (c) P_2O_5 (d) NaCl
Hints: pure NaCl is not desiccant & doesn't absorb moisture.
Answer: (d)
25. Two or more vectors are said to be collinear if they are:
(a) intersecting the same line
(b) parallel to the same line
(c) perpendicular to the same line
(d) both a. and c.
Hints: they are collinear if their line



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reaches its elastic limit
(d) the stress at which the material breaks

Hints: By definition

Answer: (d)

124. 'Frown on somebody' means to:

- (a) Fall flat upon a stranger
- (b) Stay alive working hard
- (c) Disapprove of somebody
- (d) Unable to be successful

Hints: the idiomatic expression means to disapprove of some body.

Answer: (c)

125. Cobalt metal generally forms colored compounds. The color is due to:

- (a) d-d electronic transition which falls in the visible range
- (b) p-p electronic transition which falls in the visible range
- (c) d-v electronic transition which falls in the visible range.
- (d) d-p electron transition which falls in the visible range

Hints: cobalt is d-block element. Color of transition metals is due to d-d transition of electrons.

Answer: (a)

126. The catalyst used in Friedel-Crafts reaction

- (a) Lewis base
- (b) Lewis acid
- (c) amphoteric compounds
- (d) none of these

Hints: Friedel-Crafts reaction undergoes by electrophile substitution reaction and involves generation of electrophile so the generation of electrophile will take place by those species which are electron pair acceptors (Lewis acids) e.g. $AlCl_3$

Answer: (b)

127. $ax^2 + bx + c = 0$ will NOT be a quadratic equation if:

- (a) $b \neq 0, c = 0$
- (b) $a \neq 0, b = 0$
- (c) $a = 0$
- (d) $b = 0$

Hints: because if $a = 0$, the equation becomes linear

Answer: (c)

128. The acceleration of free fall on a planet P is 1/6th of the acceleration of free fall on earth. The mass of a body on planet P is 30 kg. What is its weight on planet P?

- (a) 4.9 N
- (b) 100 N
- (c) 290 N
- (d) 49 N

Hints: $w = mg/6 = 30 \times 9.8/6 = 49N$

Answer: (d)

129. What will happen if a small piece of sodium metal is dropped into ethanol in a test tube?

- (a) No reaction will take place
- (b) reaction will take place with the evolution of hydrogen gas.
- (c) reaction will take place with the evolution of oxygen gas
- (d) reaction will take place and only sodium ethoxide will be formed with no evolution of any gas

Hints: $2C_2H_5OH + 2Na \rightarrow 2C_2H_5ONa + H_2$

Answer: (b)

130. The general term T_{r+1} in $(a+b)^n$ is:

- a) $\binom{n}{r} a^{n-r-1} b^r$
- b) $\binom{n}{r} a^{n-r}$
- c) $\binom{n}{r} a^{n-r-1} b^r$
- d) $\binom{n}{r} a^{n-r-1} b^r$

Answer: (c)

131. Which is a statement of the principle of conservation of



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no. (same charge) but different mass no. (different masses)

Answer: (b)

140. If A, G and H be respectively the A.M, G.M and H.M between a and b, then which of the following relation is correct?

(a) $G1 = AH$ (b) $G > A > H$
(c) $H > A > G$ (d) $A < G < H$

Answer: (a)

141. Octane number one hundred is given to compound:

(a) 2,2,4-Trimethylpentane (b) n-heptane
(c) n-octane (d) iso heptane

Hints: octane No for 2, 2, 4 trimethyl pentane is 100

Answer: (b)

142. A zirconium nucleus, $^{100}\text{Zr}_{40}$ is a β -decay charge number increases by 2.

Answer: (b)

143. They should have arrived by now _____ I wonder:

(a) what has kept them (b) what has got them
(c) what has held them (d) what has done them

Hints: the sentence is to be completed with and appropriate expression of wonder.

Answer: (a)

144. A student measures a current as 0.5A. Which of the following correctly expresses this result?

(a) 50mA (b) 50MA (c) 500MA (d) 500 mA

Hints: $0.5.A = \frac{0.5 \times 1000}{1000} = 500\text{mA}$.

Answer: (d)

145. Nylon-6, 6 is obtained from:

(a) adipic acid and hexamethylene diame

(b) tetrafluoroethylene

(c) vinyl cyanide (d) vinyl benzene

Answer: (a)

146. $i^{48} =$

(a) i (b) $-i$ (c) -1 (d) 1

Hints: $-i^{48} = -(i^2)^{24} = -(-1)^{24} = -(1) = -1$

Answer: (c)

147. He said to me, — what a stupid fellow you are! Indirect form of the sentence is:

(a) he told me that you were a stupid fellow.

(b) He exclaimed that I was a very stupid fellow.

(c) he exclaimed that what stupid fellow I was.

(d) he did tell me that I had been stupid fellow

Hints: reporting speech is in past tense and reported speech is present simple. Sentence is exclamatory.

Answer: (d)

148. Which one of the following is thermosetting polymer?

(a) nylon-6, 6 (b) Poly ethylene
(c) Bakelite (d) Teflon

Hints: thermosetting plastic is that polymer which becomes hard on heating and softness cannot be gained. E. g. Teflon.

Answer: (d)

149. Factors of $x^2 + 9$ are:

(a) $(x + 3)(x - 3)$ (b) $(x + 3i)(x - 3i)$

(c) $(x - 3)(x - 3)$ (d) $(x + 3i)(x + 3i)$

Answer: (b)

150. The quantity x is to be determined



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distance from an isolated alpha particle is 3.0×10^7 N C⁻¹. What is the force on an electron when at that distance from the alpha particle?

- (a) 4.8×10^{-12} N (b) 2.6×10^{12} N
(c) 3.0×10^7 N (d) 6.0×10^7 N

Hints: $F = q E = 1.6 \times 10^{-19} \times 3 \times 10^7 = 4.8 \times 10^{-12}$ N

Answer: (a)

177. Markownikoff's rule is NOT applicable when HBr is added to:
(a) 3-pentene (b) 2-Butene (c) 1-Butene (d) Propene

Hints: Markownikoff's Rule is applicable for unsymmetrical alkene only.

$\text{CH}_3\text{-CH}=\text{CH-CH}_3$ 2-butene is symmetrical

Answer: (b)

178. The associated angle of $\frac{8\pi}{3}$ i:

- a) $\frac{\pi}{2}$
b) $\frac{\pi}{3}$
c) $\frac{2\pi}{3}$
d) $\frac{4\pi}{5}$

Hints: Associated angles are acute angles whose terminal ray is same to given angle.

Answer: (c)

179. Light of wavelength 700nm is incident on pair of slits forming fringes 3.0mm apart on a screen. What is the fringe spacing when light of wavelength 350 nm is used and the slit separation is doubled?
(a) 0.75mm (b) 1.5mm (c) 3.0 mm
(d) 6.0 mm

Hints: Fringe spacing = $\frac{\lambda D}{d} = 3$ mm

After conditions fringe spacing = 0.75 mm

Answer: (a)

180. He said, "may this child live long!"

Indirect form of the sentence is :

- (a) He prayed that that child may live long.
(b) He prayed that child will live long.
(c) He said that that child might live long.
(d) He prayed that that child might live long.

Hints: the reported speech is in present simple and is expressing wish/desire.

Answer: (d)

181. AlCl_3 generally behaves as:

- (a) Lewis acid (b) Bronstead base
(c) Bronstead acid (d) Lewis base

Hints: $\text{H}_3\text{N} + \text{AlCl}_3 \rightarrow [\text{H}_3\text{N} \rightarrow \text{AlCl}_3]$

As AlCl_3 accepts pair of electrons it's a Lewis acid.

AlCl_3 is e⁻ deficient.

Answer: (a)

182. A coin is flipped thrice. The number of sample points in the sample space is:

- (a) 3 (b) 6 (c) 8 (d) 9

Hints: $2^3 = 2 \times 2 \times 2 = 8$

Answer: (c)

183. The radius R of the circumcircle is:

- a) $\frac{a}{2\sin\alpha}$
b) $\frac{b}{2\sin\beta}$
c) $\frac{abc}{4\Delta}$
d) All

Answer: (c)

184. Several resistor are connected in

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33. An object in a satellite orbiting around the earth is weightless because:
A) $g = 0$ B) No force acts on it
C) Its motion is free fall D) It is far away from earth
Hints: when a body falls freely it is weightless. As there is no vertical force to balance the weight of an object.
Answer: (c)
-
34. The expression for binding energy is:
A) $EB = fh$
B) $EB = [(ZMP + N Mn) - ZMA]C^2$
C) $EB = ZMPC^2 + N Mn ZMA C^2$
D) $EB = ZMP + N Mn - M C^2$
Hints: when a nucleus is formed from Z protons and N neutrons mass deficit takes place which is converted into energy. $E = (\Delta m)c^2$
Answer: (b)
-
35. Mathematics difficult but is fascinating.
A) seems B) is seeming
C) seemed D) seem
Answer: (a)
-
36. The color of bone marrow is:
A) Red B) Yellow
C) Orange D) Both A) and B)
Answer: (d)
-
37. Enzymes are basically:
A) Proteins B) Carbohydrates
C) Hydrocarbons D) None of the above
Hints: Enzymes are special proteins which catalyze biochemical reactions.
Answer: (a)
-
38. Half- life of given sample is 44 years. The sample will reduce to 50% of the original value after:
A) 22 years B) 88 years
C) 11 years D) None of the above
Hints: Half- life of simple is 44 years, therefore after 88 years the sample will reduce to 25% .
Answer: (d)
-
39. Please come to the point; don't beat ___ the bush.
A) across B) about
C) along D) around
Hints: idiomatic expression: means an indirect speech. After the word "beat" the preposition "about" is used.
Answer: (b)
-
40. Ozone is:
A) Greenish, tasteless, light gas
B) Blue green, and bitter in taste
C) Blue, poisonous and explosive gas
D) Purple yellow, poisonous and nonexplosive gas
Hints: the blue color of sky is due to the presence of ozone layer in stratosphere (ozoneosphere)
Answer: (c)
-
41. Rectified spirit is:
A) 100% ethanol B) 95% ethanol
C) 90 % ethanol D) 35% ethanol
Answer: (b)
-
42. The time rate of change of magnetic flux has the same dimensions as that of:
A) Current B) Resistance
C) Magnetic induction D) Potential difference
Hints: $E_{mf} = \frac{\Delta\phi}{\Delta t} = \text{potential difference}$
Answer: (d)



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43. A non-connective tissue is:
A) Areolar tissue B) Tendon
C) Neuron D) Ligament
Hints: Neuron is a cell which conducts impulses between CNS and body part.
Answer: (b)
-
44. Lucas Test is used to detect the presence of:
A) Alcohols B) Phenols
C) Amino acids D) Carboxylic acids
Hints: It is used to differentiate 1^o alcohol, 2^o alcohol and 3^o alcohol.
$$R-OH + HCl \xrightarrow{ZnCl_2} R-Cl + H_2O$$

mixture of $ZnCl_2$ and HCl is called Lucas reagent.
Answer: (a)
-
45. The transverse nature of light is verified with the phenomenon of:
A) Interference B) Polarization
C) Diffraction D) Dispersion
Hints: polarization is the property of transverse waves.
Answer: (b)
-
46. She has complained _____ me to the Principal.
A) about B) from
C) against D) over
Answer: (c)
-
47. Speech and language area are located in:
A) Thalamus B) Medulla oblongata
C) Right cerebral hemisphere D) Left cerebral hemisphere
Answer: (d)
-
48. Choose the correct statement:
A) The aliphatic polyamides are generally known as Nylons
B) The aliphatic polyamides are generally known as Polyester
C) The aliphatic polyamides are generally known as Epoxy Resins
D) None of the above
Hints: Nylon contains many amide linkages thus it is called aliphatic polyamide.
Answer: (a)
-
49. $Na_2B_4O_7 \cdot 10H_2O$ is the formula of:
A) Bauxite B) Borax
C) Carborundum D) Colemanite
Answer: (b)
-
50. I said to him, 'Can you read this letter?'
Indirect form of the sentence is:
A) I said to him whether he read that letter.
B) I asked him if could he read this letter.
C) I told him that he could read that letter.
D) I asked him if he could read that letter.
Hints: Indirect speech: Sentence is interrogative.
Answer: (d)
-
51. Phytochromes are involved in:
A) Photorespiration
B) Photophosphorylation
C) Photoperiodism D) Phototropism
Hints: phytochrome is a plant flowering hormone both in SDP & LDP.
Answer: (c)
-
52. 1 amu is equal to $1.661 \times 10^{-24}g$, then 1.0 g will be equal to:
A) 6.022×10^{23} amu B) 6.022×10^{23} amu



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manifestation of law of conservation of energy. Mech energy \rightarrow elec energy
Answer: (c)

88. The sense of hearing is concerned with:
A) Cerebrum B) Cerebellum
C) Medulla D) Hypothalamus
Hints: Sense of hearing is concerned with cerebellum which is the part of hind brain.
Answer: (b)
89. Sodium hydroxide acts on Aluminum oxide to form:
A) NaAlO_3 B) $\text{Na}_3\text{Al}_2\text{O}_6$
C) NaAlO_2 D) NaAl_2O_3
Hints: $\text{Al}_2\text{O}_3 + 2\text{NaOH} \rightarrow 2\text{NaAlO}_2 + \text{H}_2\text{O}$
Answer: (c)
90. The number of significant figures in the measurement $x = 10.00300$ are:
A) 7 B) 8
C) 5 D) 3
Answer: (a)
91. You need to go to the hospital _____ possible. An erratic heart-beat can be very dangerous.
A) as good as B) as long as
C) as much as D) as soon as
Hints: The time expression "as soon as" is correct.
Answer: (d)
92. Largest lymphatic duct is the:
A) Abdominal duct B) Thorasic duct
C) Femoral duct D) Subclavian duct
Answer: (b)
93. The σ bond formed between carbon and oxygen atoms in aldehyde and ketone is due to the overlap of:
A) $\text{sp}^2\text{—s p}$ B) $\text{sp}^2\text{—sp}^2$

C) $\text{sp}^3\text{—sp}^2$ D) s p—s p
Hints: Diagram \rightarrow
Answer: (b)

94. Two equal, antiparallel and non-concurrent forces that produce only angular acceleration are:
A) Couple B) Couple arm
C) Collinear forces D) Torque
Hints: Couple can produce angular acceleration.
Answer: (a)
95. Redox action takes place during the process of:
A) Respiration B) Photosynthesis
C) Growth D) Both A and B
Hints: Redox reaction is also called oxidation reduction reaction.
Answer: (d)
96. Paper is biodegradable material. It produces gas whose emission is environmentally objectionable. Which is that gas?
A) CO_2 B) SO_2
C) CH_4 D) NO_2
Hints: CH_4 is produced during decomposition of paper.
Answer: (c)
97. The minimum number of forces that keep the body in equilibrium are:
A) Two B) Three
C) Four D) Five
Hints: Two forces should be equal in magnitude and opposite in direction to make $\sum F = 0$ & $\sum T = 0$.
Answer: (a)
98. A ball of mass 5 kg is dropped from a height of 78.4 m. The time taken by the ball to hit the ground is:
A) 2s B) 4s
C) 8s D) 16s



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C) Starch D) Glucose

Hints: Glucose is a monosaccharide.

Answer: (d)

109. Select the compound that will give Positive Iodoform test:

A) Benzaldehyde B) 2-Pentanone
C) 3-Hexanone D) 3-Pentanone

Hints: in 2-pentanone there is methyl thus it gives iodoform test.

Answer: (b)

110. The part of electromagnetic spectrum in which Lyman series lies is:

A) Visible region B) Infrared region
C) Ultra violet region D) X-rays

Answer: (c)

111. A single ovum of human being contains:

A) X — chromosomes B) XX — chromosomes
C) YY — chromosomes D) XY — chromosomes

Hints: An ovum always contains one X chromosome whereas a sperm may contain X or Y chromosome.

Answer: (a)

112. Choose the correct statement:

A) Ionic solids exist in the form of molecules
B) Ionic solids have high volatility
C) Ionic solids exist in the form of liquids and
D) Ionic solids have high melting points and boiling points

Answer: (d)

113. The centripetal force acting on a body rotating in a circle of radius r is F . If the body moves in a circle of radius half of the initial value keeping other quantities

constant, then the percentage change in the centripetal force is:

A) 300% B) 100%
C) 400% D) 200%

Hints: $F = \frac{mv^2}{r}$ when $r' = r/2$ then $F' = \frac{mv^2}{r/2} = 2 \frac{mv^2}{r} = 2(F) = 2(100) = 200$, $\Delta F = F' - F = 200 - 100 = 100\%$
Answer: (b)

114. In a dihybrid cross, how many homozygous offspring can be produced?

A) 4 B) 3
C) 2 D) 9

Hints: In dihybrid cross, between an organism with the genotypes AAbb and aaBB, F_2 generation will contain only two homozygous plants, one with all dominant and the other with all recessive alleles.

Answer: (c)

115. Which is true about London forces?

A) London forces are present in non-polar molecules
B) London forces are present in polar molecules
C) London forces are created between instantaneous dipole and induced dipole
D) All of the above.

Hints: London forces are present in all types of molecules.

Answer: (d)

116. Which one of the following properties of electromagnetic waves do not change in vacuum?

A) Speed B) Wavelength
C) Frequency D) All of the above

Hints: All electromagnetic waves irrespective of their λ and f have same speed in vacuum. $C = \lambda f$



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atom to be:

$$r = \frac{n^2 \epsilon_0 h^2}{e^2 \pi m}$$

If electron moves from $n = 1$ to $n = 2$, by how much times the radius of the orbit will increase?

- A) 2 times B) 3 times
C) 4 times D) 5 times

Hints: $r_1 = r_0, r_2 = 4r_0$ when $n = 2, r_2 = 4r_0$

Answer: (c)

127. The waveform of sinusoidal voltage, its frequency and phase can be found by:

- A) CRO B) Diode
C) Transistor D) Radio

Hints: CRO can be used as voltmeter, frequency meter and phase meter.

Answer: (a)

128. Which blood group transfusion can be made without risk?

- A) Group A to group B B) Group AB to group O
C) Group A to group O D) Group B to group AB

Hints: Group AB has no antibodies in blood group can therefore called universal acceptor. Any blood group can donate blood to group AB.

Answer: (d)

129. The first law of thermodynamics has a statement which implies that:

- A) No heat enters or leaves the system
B) The temperature remains constant
C) All work is mechanical
D) Energy is conserved

Hints: First law of thermodynamics

is law of conservation of energy and applies to heat energy.

Answer: (d)

130. Haemophilia affects males more than females because of:

- A) Dominant autosomes B) Dominant X- linked
C) Recessive X- linked D) y- chromosome linked

Hints: All hereditary disease which are caused by a recessive allele present on X chromosome and more common in male than females. This is become males get the disease when they have a recessive allele on their X chromosome whereas female will get the disease only if they have recessive allele on both X chromosome

Answer: (c)

131. The volume occupied by 3.2 g of oxygen at STP is:

- A) 22.4 dm³ B) 2.24 dm³
C) 11.2 dm³ D) 16.0 dm³

Hints: Mass of O₂ = 3.2g, $n_{O_2} \times 22.4$

$$= \frac{3.2}{32} = 0.1 \text{ mol}, n_{O_2} = \frac{\text{volume in dm}^3}{22.4}$$



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C) Parenchyma, sieve tube, vessels
D) Fibers, companion cells, tracheids

Hints: Tracheids are specialized cells of xylem, whereby companion cells & sieves & tubes are found in phloem. Xylem tissue contains vessels, tracheide and paranchyma cells

Answer: (a)

149. Which of the following compounds on treatment with NaHCO_3 will liberate CO_2 ?

A) CH_3COOH B) $\text{C}_2\text{H}_5\text{NH}_2$
C) CH_3COCH_3 D) $\text{CH}_3\text{CH}_2\text{OH}$

Hints: $\text{CH}_3\text{COOH} + \text{NaHCO}_3 \rightarrow \text{CH}_3\text{COONa} + \text{CO}_2 + \text{H}_2\text{O}$

Answer: (a)

150. A body in equilibrium must not have:

A) Kinetic energy B) Velocity
C) Momentum D) Acceleration

Hints: A body is said to be in equilibrium if both its linear and angular acceleration are zero.

Answer: (d)

151. Choose the correct sentence out of the following;

A) The meeting does not approve in your scheme.
B) The meeting do not approves of your scheme.
C) The meeting does not approve of your scheme.
D) The meeting does not approve about your scheme.

Answer: (c)

152. The interval of pace maker signals from S.A.N to AV.N is:

A) 01 second B) 0.1 second
C) 02 seconds D) 0.2 second

Answer: (b)

153. Commonly used coagulant used for the purification of water is:

A) $\text{Ca}(\text{NO}_3)_2$ B) MgCl_2
C) $\text{Al}_2(\text{SO}_4)_3$ D) $\text{Ca}(\text{OH})_2$

Hints: Alum is common coagulant.

Answer: (c)

154. Forces controlling the reactions are proportional to the product of the active masses (concentration) of chemicals.

The above statement is of:

A) Raoult's Law B) Le Chatlier's principle

C) The law of conservation of energy

D) The law of mass action

Answer: (d)

155. Sound waves cannot be:

A) Polarized B) Reflected
C) Refracted D) Diffracted

Hints: polarization is the property of transverse waves since sound waves are longitudinal, they cant be polarized

Answer: (a)

156. He said to me, —May you succeed in life!! Indirect form of the sentence is:

A) He said to me that may you succeed in life.

B) He prayed that I might succeed in life.

C) He prayed that he might succeed in life.

D) He prayed that you may succeed in life.

Hints: The exclamatory sentence is to be changed from direct indirect speech.

Answer: (b)



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(amplitude)²

Hints: $E = \frac{1}{2} m\omega^2 a^2 \rightarrow \text{intensity} \propto (\text{amplitude})^2$

Answer: (b)

176. The diameter of human capillary is:

- A) 5 microns B) 6 microns
C) 7 microns D) 8 microns

Answer: (c)

177. Organisms phenotypically similar but genotypically different are said to be:

- A) Monozygous B) Homozygous
C) Heterozygous D) Multizygous

Answer: (c)

178. Which of the following can function as Lewis acid?

- A) CN B) NH₃
C) CH₃-O-CH₃ D) I⁺

Hints: I⁽⁺⁾ is electron deficient thus it acts as Lewis acid.

Answer: (d)

179. Conversion of alternating current into direct current is called:

- A) Rectification B) Amplification
C) Oscillation D) Regeneration

Hints: Rectifier converts ac into dc by rectification.

Answer: (a)

180. Gibberellin was isolated from:

- A) An algae B) A fungus
C) A bacterium D) A virus

Hints: A fungus named Gibberella fujikuroi is responsible for secretion of gibberellin mainly in paddy fields of rice.

Answer: (b)

181. All amino acids found in proteins are:

- A) -amino acids B) amino acids
C) Both and D) None of the above

Hints: both α & β -amino acids are equally important for protein synthesis. As the secondary proteins are further classified as a helix and β pleated sheets. In more complex form of secondary proteins

(Tertiary) both α & β are present. $\text{NH}_2\text{-RCH-COOH} + \text{NH}_2\text{-RCH-COOH}$

$\alpha \beta$

Answer: (c)

182. Which of the following pairs have the same units and dimensions?

- A) Resistance and resistivity
B) Conductivity and resistivity
C) Electromotive force and potential difference
D) Resistivity and temperature coefficient of resistivity

Hints: $\epsilon = \frac{w}{q\phi} = J/C, \nu = \frac{w}{q\phi} J/C \therefore$

Dimensions are same.

Answer: (c)

183. Process of bone formation is called:

- A) Calcification B) Chondrification
C) Decalcification D) Ossification

Answer: (d)

184. Which is a trimer of ethyne?

- A) PVC B) Benzene
C) Toluene D) Teflon

Hints: $3\text{CH} \equiv \text{CH} \rightarrow \text{C}_6\text{H}_6$ Ethyne benzene

Answer: (b)

185. The activity of the radioactive material can be expressed in the units of:

- A) Curie B) Becquerel
C) Tesla D) Both A) and B)

Hints: Curie & becquerel are units of radioactivity. 1 Curie = 3.7×10^{10} Bq

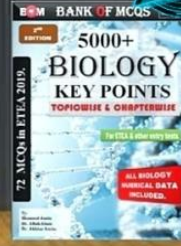
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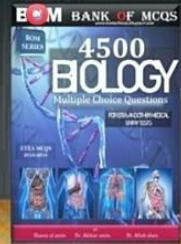
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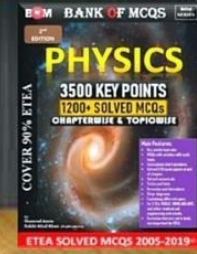
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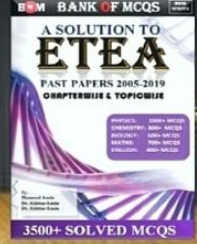
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- (a) imagined (b) visualized
(c) fantasized (d) discovered
Hints: Correct form of verb is "imagined"
Answer: (a)
11. If $\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^{2n} = ?$
(a) e^{-1} (b) $e^{\frac{1}{2}}$ (c) e^2 (d) e^3
 $(\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^n)^2 = e^2$
Answer: (c)
12. Calcium is found in nature as $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. This is commercially called:
(a) Epsom salt (b) Dolomite
(c) Magnesite (d) Gypsum
Answer: (d)
13. If $\vec{a} = I + k$ and $\vec{b} = i + j$, then the angle between \vec{a} and \vec{b} is:
(a) 60° (b) 75° (c) 45° (d) 30°
Hints: $\vec{a} \cdot \vec{b} = AB \cos \theta$
 $1+0+0 = \sqrt{1+1} \times \sqrt{1+1} \cos \theta \rightarrow 1 = 2 \cos \theta \rightarrow \cos \theta = \frac{1}{2} \rightarrow \theta = 60^\circ$
Answer: (a)
14. $\frac{d}{dx} (\cot^{-1} x) = ?$
a) $\frac{1}{1+x^2}$
b) $\frac{1}{\sqrt{x^2-1}}$
c) $\frac{-1}{1+x^2}$
d) $-\text{cosec}^2$
Answer: (c)
15. Beryllium, an alkaline earth metal resists towards complete oxidation because:
(a) it is less reactive
(b) the oxidation process is slow
(c) it forms hard protective coat of BeO
(d) None of the above
Hints: Be O forms on surface which protects from further oxidation.
Answer: (c)
16. If $\vec{a} \cdot \vec{b} = 0$ then $\frac{\vec{a} \times \vec{b}}{a b}$ will be equal to:
(a) AB (b) Zero
(c) $AB \sin \theta$ (d) $AB \cos \theta$
Hints: if $\vec{a} \cdot \vec{b} = 0$ neither $\vec{a} = 0$ nor $\vec{b} = 0$, $\theta = 90^\circ$ $\sin 90^\circ = 1$ $\cos 90^\circ = 0$
Answer: (a)
17. $k-2$ $1 = 0$ then $k =$
 $5k+2$
(a) 0 (b) 3 (c) -3 (d) +3
Hints: $(K-2)(K+2)-5=0 \rightarrow K^2-9=0$
 $\rightarrow K = \pm 3$
Answer: (d)
18. Which oxide sodium metal predominantly forms in oxygen?
(a) Na_2O (b) Na_2O_2 (c) Na_2O_3 (d) NaO_2
Hints: Na forms peroxide.
Answer: (b)
19. Newton's first law of motion provides:
(a) 1st condition of equilibrium
(b) 2nd condition of equilibrium
(c) complete equilibrium
(d) rotational equilibrium
Hints: 1st condition $F=0$, $a=0$
Answer: (a)
20. Most people like the ___ of not having to work.
(a) scheme (b) suggestion
(c) design (d) idea
Answer: (d)
21. The co-factor of an element a_{ij} denoted by A_{ij} is: _____
(a) $(-1)^{ij} M_{ij}$ (b) $(-1)^{i+j} M_{ij}$



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b) $\sin^{-1} \left(\frac{a}{x} \right) + c$

c) $\sin^{-1} \left(\frac{x}{a} \right) + c$

d) $\sin^{-1} x + c$

Answer: (c)

42. Choose the inter halogen compound

a) OF₂ (b) BrF₅ (c) HgBr₃ (d) HI

Answer: (b)

43. The gravitational potential energy per unit mass is called:

- (a) Gravitational potential
(b) Absolute potential energy
(c) Potential energy (d) potential hill

Hints: $U = \frac{P.E}{m}$

Answer: (a)

44. The length of a quarter of a circle, whose radius is r is:

a) $4\pi r$ b) $2\pi r$ c) $\frac{1}{4}\pi r$ d) $\frac{1}{4}\pi r$

Hints: length of quarter circle = $\frac{1}{4}$

$(2\pi r) = \frac{1}{4}\pi r$

Answer: (d)

45. In contact process for the manufacture of sulphuric acid, the impurity Arsenic is removed by freshly precipitated ferric hydroxide which absorb Aseneous oxide to form:

(a) Fe As O₄ (b) Fe As₂ O₄
(c) Fe As₃ O₄ (d) FeAsO₃

Answer: (a)

46. If the mass of the body is made three times and the velocity becomes double then the kinetic energy will increase:

a) 6 times (b) 12 times (c) 24 times
(d) 18 times

Hints: K.E = $\frac{1}{2}mv^2$ put $m' = 3m$ and $v' = 2v$

Answer: (b)

47. $X^2 + 3 = ?$

a) $(x + i\sqrt{3})(x - i\sqrt{3})$

b) $(x - i\sqrt{3})(x - i\sqrt{3})$

c) $(x + i\sqrt{3})(x + i\sqrt{3})$

d) $(x + i\sqrt{3})(x - i\sqrt{3})$

Hints: convert in $a^2 - b^2 = (a + b)(a - b)$ from

Answer: (a)

48. Nitric oxide was passed through FeSO₄ solution a brown compound was formed as formula is:

(a) FeSO₄ NO (b) FeSO₄ (NO)₂
(c) Fe(SO₄)₂ NO (d) None of above

Hints: Also called as ring test for nitrate.

Answer: (a)

49. A stone is rotated in vertical circle at the end of a string. When the stone is at the top of the circle then the tension in string is:

(a) Greater than the weight of stone
(b) equal to the weight of the stone
(c) Less than the weight of the stone
(d) None of the above

Hints: At top, $T = mg - \frac{mv^2}{r}$

Answer: (c)

50. Many People don't want their dirty linen washed in public The underline phrase means:

(a) to have their dirty clothes drying on a clothes line
(b) to have their private affairs talked about in public
(c) to speak about and criticize something in public



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bothering about other people.

Answer: (d)

71. The lines represented by $ax^2 + 2hxy + by^2 = 0$ are parallel if:

a) $h^2 - ab = 0$ b) $h^2 < ab$ c) $h^2 - ab < 0$ d) $h^2 + ab = 0$

Hints: For parallel lines $\theta = 0$ $\tan \theta = 0$

Answer: (a)

72. Thermal decomposition of alkanes in the absence of air is called:

(a) combustion (b) oxidation
(c) cracking (d) hydrogenation

Answer: (c)

73. [MT⁻²] are the dimension of:

(a) viscosity (b) intensity
(c) pitch (d) surface tension

Hints: $F = 6\pi\eta r v$

Answer: (a)

74. The solution of $cy + ax + 3y \leq c$ is:

(a) closed half plane (b) open half plane
(c) circle (d) parabola

Answer: (a)

75. The dehydrohalogenation of 2-bromobutane with alcoholic potassium hydroxide gives mainly:

(a) 2-Butyne (b) 2-butene
(c) 1-Butene (d) 1-butyne

Hints: $\text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \rightarrow \text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$

Reaction follow satzyf rule.

Answer: (b)

76. A 3 meter long string resonates in three loops. The frequency of the stationary wave having velocity of 30 m/s mainly:

(a) 5 Hz (b) 30 Hz (c) 15 Hz (d) 10 Hz

Hints: $f = \frac{mv}{2l} = \frac{3 \times 30}{2(3)} = 15$

Answer: (c)

77. If A and B are not mutually exclusive events then $P(A \cup B) = \emptyset$

(a) $P(A) + P(B)$ (b) $P(A) + P(B) - P(A \cap B)$
(c) $P(A) + P(B) + P(A \cap B)$ (d) $P(A) - P(B)$

Answer: (b)

78. Baeyer's reagent is:

(a) $\text{HC l} + \text{Zn Cl}$ (b) N_2NNH_2 (c) Br_2 in CCl_4 (d) Dil K MnO_4

Hints: Alkaline KMnO_4

Answer: (d)

79. Which one of the following properties of light does not change with the nature of medium?

(a) frequency of light (b) wavelength of light
(c) speed of light (d) all of these

Hints: Frequency does not depend on medium.

Answer: (a)

80. I don't like pasta and my sister doesn't

(a) too (b) neither (c) either (d) also
Hints: "Either" is determinor which is used for different purposes.

Answer: (c)

81. The eccentricity of hyperbola is:

(a) $e < 0$ (b) $0 < e < 1$ (c) $e = 1$ (d) $e > 1$

Answer: (d)

82. The addition of HX to a double bond the hydrogen goes to the carbon that already has more hydrogen is a statement of:

(a) Hund's rule (b) morkownikov's rule
(c) Huckel rule (d) None of the above



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- Answer: (b)
83. The phase change of 180° is equal to path difference: (a) zero (b) half the wavelength (c) double of wavelength (d) quarter the wavelength
Hints: $\lambda = 360^\circ \frac{\lambda}{2} = 180^\circ$
Answer: (b)
84. The radius of the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ is:
a) $\sqrt{g^2 + f^2 + c}$ b) $\sqrt{g^2 + f^2 - c}$
c) $\sqrt{g^2 + f^2 + c}$ d) $g + f - c$
Answer: (c)
85. Which of the following compounds on hydrolyses gives Ethyne?
(a) CaC_2 (b) Mg_2C_3 (c) Al_4C_3 (d) CuCl_2
Hints:
Answer: (a)
86. If the width of the slit on the young's double slit experiment becomes double the fringe spacing will become:
(a) double (b) one quarter (c) four times (d) half
Hints: Use $x = \frac{\lambda D}{d}$, $d' = 2d$ so $x' = \frac{\lambda D}{2d}$
Answer: (d)
87. The equation $ax^2 + by^2 + 2hxy + 2gx + 2fy + c = 0$ represent a circle if:
a) $a \neq b, h \neq 0$ b) $a \neq b, h = 0$ c) $a \neq b, h \neq 0$ d) $a = b, h = 0$.
Answer: (d)
88. When acetylene is passed through hot iron tube at 400°C it gives:
(a) Benzene (b) O-xylene (c) Toluene (d) polythene
Answer: (a)
89. The magnification of a magnifying glass having focal length of 10 cm for an object lying at a distance of 20 cm is:
(a) 0.01 (b) 10 (c) 0.1 (d) 1
Hints: $M = (1 + \frac{d}{f}) = (1 + \frac{20}{10}) = 3$
Answer: (c)
90. "MISOGYMNIST" most nearly means A person who:
(a) misses his shots (b) hates marriage (c) is against hunting (d) is left out of a sporting team
Answer: (b)
91. The sum of exponents of a and b in every term of the expansion $(a + b)^n$ is:
(a) n (b) 1 (c) 0 (d) 2n
Hints: Condition of Binomial theorem
Answer: (a)
92. Which of the following compounds comparatively would react rapidly in an SN_2 reaction?
(a) $(\text{CH}_3)_3\text{CI}$ b) $(\text{HC}_3)_2\text{CHI}$ (c) $\text{CH}_2\text{CH}_2\text{I}$ d) $\text{CH}_2=\text{CHI}$
Hints: SN_2 reaction is given by primary alkyl halides
Answer: (c)
93. The ratio of universal gas constant to Avogadro number is equal to:
(a) plank's constant (b) boltzman's constant (c) Stefan's constant (d) decay constant
Hints: $K = \frac{R}{N_A}$
Answer: (b)
94. 2nd term in the expansion of $(1-2x)^{\frac{1}{3}}$ is:
a) $\frac{7}{2}$ b) $\frac{x}{3}$ c) $\frac{2x}{3}$ d) $-\frac{2x}{3}$



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Hints: Second term = $\frac{\frac{1}{3}(1) \frac{1}{3}(-2x)}{1!} = -\frac{2x}{3}$

Answer: (d)

95. Ethylmagnesium iodide reacts with formaldehyde to give product which one acid hydrolysis forms:

(a) an aldehyde (b) a primary alcohol
(c) a ketone (d) a secondary alcohol

Hints:

Answer: (b)

96. In air at S.T.P the average speed of the

(a) nitrogen molecules is greater than oxygen molecules
(b) oxygen molecules is less than nitrogen molecules
(c) nitrogen molecules is less than oxygen molecules
(d) oxygen molecules is equal to nitrogen molecules

Hints: $N_2 = 28g/l$ and $O_2 = 32g/l$
As N_2 is lighter and have greater average speed.

Answer: (a)

97. Expansion of $(8 - 2x)^{-1}$

(a) $|x| > 4$ (b) $|x| < 4$ (c) $|x| = 0$ (d) $|x| = 0$

Answer: (b)

98. Lucas reagent is:

(a) $HCl / NaNO_2$ (b) H_2 / P (c) $HCl / ZnCl_2$ (d) HCl / HNO_3

Answer: (c)

99. The work done against friction will

(a) Not change the entropy of system
(b) decreases the entropy of system
(c) cause to drop the entropy to zero
(d) increase the entropy of system.

Hints: friction produces more heat.

Answer: (d)

100. Driving to work,
(a) he saw many children going to school
(b) the traffic made him late

(c) the traffic jams infuriated him
(d) his car broke down many times

Answer: (a)

101. Cosine of the angle between two nonzero vectors a and b is:

a) $\frac{a \cdot b}{|a||b|}$ b) $\frac{|a||b|}{a \cdot b}$ c) $\frac{a \times b}{|a||b|}$ d) a. b

Hints: $\vec{a} \cdot \vec{b} = |a||b|\cos\theta \rightarrow \cos\theta =$

$\frac{a \cdot b}{|a||b|} = a \cdot b$

Answer: (d)

102. The compound which reacts most readily with lucas reagent is:

(a) CH_3CH_2Cl (b) $(CH_3)_2CHOH$
(c) CH_3CH_2OH (d) CH_2COH

Hints: tertiary alcohol is most reactive.

Answer: (d)

103. The coulomb's force between the charges in air is 2.0N the coulomb's force between these charges in insulating medium having $\epsilon_r = 3.8$ is:

(a) 5.26 N (b) 3.8 N (c) 2.0 N (d) 0.53 N

Hints: $F' = \frac{F}{\epsilon_r} = \frac{2}{3.8} = 0.53N$

Answer: (d)

104. If then terminal arc of the angle lies in quadrant: $\theta \sin\theta$

(a) I (b) II (c) III (d) IV

Answer: (c)

105. Which of the following alcohols will give a yellow ppt of iodoform with iodine and diluted NaOH solution?

(a) 1-Propanol (b) 2-Propanol



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9. Hydration energy is the heat evolved or absorbed when:
a. one mole of gaseous ions is dissolved in one mole of water
b. one mole of ions in solid state is dissolved in one mole of water.
c. one mole of gaseous ions is dissolved in water to give infinitely dilute solution
d. one mole of ions in solid state is dissolved to form concentrated solution
Answer: (c)
10. The hypothesis of Ronald Ross relating to malaria was:
a. plasmodia are the cause of malaria.
b. bad air is involved in the spread of malaria
c. mosquitoes are possible carrier of plasmodia
d. Malaria is caused by bad air coming from marshy places.
Hints: (b) & (c) were presented by APA king & (a) by Laveron:
Answer: (c)
11. The authorities have _____ that the plane to Beirut was hijacked over the Indian ocean
a. assured b. confirmed
c. committed d. ensured
Hints: "confirmed" is the best choice according to sentence structure.
Answer: (b)
12. $j \cdot (k \times j)$ is equal to:
a. -1 b. zero c. 1 d. 2 .
Hints: $j \cdot (k \times j) = j \cdot (-j) = 0$
Answer: (b)
13. The behavior of $PbCl_2$ and $PbCl_4$ respectively are:
a. ionic and covalent b. covalent and ionic
c. covalent and coordinate covalent
d. ionic and coordinate covalent
Hints: smaller oxidation state tends to increase ionic character. $PbCl_2$ p b has $+2 =$ Ionic
 $PbCl_4 = P b$ has $+4 =$ covalent
Answer: (a)
14. Crustaceans are the only arthropods that have:
a. chitin in their exoskeleton.
b. chelicerae
c. three pairs of legs d. two pairs of antennae
Hints: "Crustaceans" have two pairs of antennae.
Antennae are sensory structures.
Answer: (d)
15. Three vectors of equal magnitude are acting on the three sides of an equilateral triangle. The magnitude of their resultant is
a. zero b. 3 c. $\sqrt{3}$ d. 1.73
Answer: (a)
16. Select the correct order in ionic behavior:
a. $AlF_3 > AlBr_3 > AlCl_3 > AlI_3$,
b. $AlCl_3, > AlF_3, > AlBr_3, > AlI_3$
c. $AlCl_3, > AlBr_3, > AlI_3, > AlF_3$,
d. $AlF_3 > AlCl_3 > AlBr_3 > AlI_3$
Hints: Ionic character is directly proportional to the electronegativity difference.
Answer: (d)
17. A cloned baby sheep — Dolly — was attributed to
a. Four Parents b. Three Parents
c. Two parents d. One Parent only
Hints: One parent provide somatic cell. The other female parent



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provided egg cell these number was replaced by the number of somatic cell. The modified egg was the placed in the uterus of third female parent who gave birth the dolly.
Answer: (b)

18. The physical quantity which produces angular acceleration in the body is:

a. Force b. Moment of inertia
c. Impulse d. Torque

Hints: Torque = $I\alpha$, where α = angular acceleration.

Answer: (b)

19. Select the most stable covalent hydride:

(a) BiH₃ (b) NH₃ (c) HF (d) SbH₃

Hints: NH₃ possess strong hydrogen bonding.

Answer: (b)

20. In spiders, the organs that contain the silk glands are called

(a) spinnerets (b) carapaces
(c) medriporite (d) tube feet

Hints: "spiders" have tubular structures called spinnerets that produce silk fibers used to make web.

Answer: (a)

21. She has let _____ her house fully furnished to a Korean couple.

(a) out (b) at (c) up (d) in

Hints: "let out" means to give a building on rent.

Answer: (a)

22. The point at which an applied force produces linear motion but no rotatory motion is:

(a) mid-point (b) center of gravity
(c) optical center (d) pole

Answer: (b)

23. Potassium is found in nature as carnallite, its composition is:
(a) KAlSi₃O₄ (b) KClMgCl₂·6H₂O
(c) KCl (d) KCl·Al₂O₃·2H₂O
Answer: (b)

24. Water molecules ionize to H⁺ and OH⁻ ions in the living organisms at the rate of:

a) 01 out of 550million molecules
b) 05 out of 850million molecules
c) 10 out of 850million molecules
d) 20out of 1000million molecules

Answer: (a)

25. A ball is thrown vertically upward with a velocity of 98 m/s. if it takes 10 seconds to reach the highest point then the acceleration of the ball is:

(a) 9.8m / s² (b) 980m / s²
(c) 98m / s² (d) -9.8m / s²

Hints: $v_f = vi + at$

Answer: (d)

26. Fajan`s rule states that small highly charged ions tend to form more:
(a) ionic compounds (b) polymeric compounds
(c) covalent compounds (d) coordination compound

Hints: Small size and greater nuclear charge ions tends to form covalent compounds.

Answer: (c)

27. Which of the following bird structures are especially adapted to support flight?

(a) Cloacas (b) Bills
(c) Gizzard (d) chest muscles

Hints: The sternum in birds is modified to form a strong structure called keel. Wing muscles are strongly attached to the keel to enable flight



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- Answer: (d)
28. A man throws a ball vertically upward in a compartment of an accelerated train. The ball will fall
(a) in front of him (b) in his hand
(c) behind him (d) beside him
Hints: Uniform motion. Wrong MCQ
Answer: (b)
29. Beryllium, a member of alkaline earth metal, is almost as hard as:
(a) calcium (b) Potassium
(c) iron (d) magnesium
Answer: (c)
30. Which of the following is composed of lipids?
(a) Some hormones (b) Enzymes
(c) Skin tendons (d) insulin
Hints: steroid hormones of Adrenal cortex are lipid in nature. Some hormones basically sex hormones are lipids physically. e. g steroids progesterone estrogen. e t c .
Answer: (a)
31. have no _____ to listen to the budget speech.
(a) trouble (b) convenience
(c) patience (d) perseverance
Hints: "patience" best fits. It means courage to listen
Answer: (c)
32. A bomber drops a bomb, when it is vertically above the target. It misses the target because of:
(a) vertical component of the velocity of bomber
(b) force of gravity
(c) acceleration of the bomber
(d) horizontal component of the velocity of bomber
Hints: projectile motion.
- Answer: (c)
33. Select the correct statement.
(a) All alkali metal hydroxides are stable to heat
(b) All alkali metal hydroxides are unstable to heat
(c) All alkali metal hydroxides are stable to heat except Cs OH
(d) All alkali metal hydroxides are stable to heat except Li OH
Hints: $2\text{Li OH} \xrightarrow{\text{heat}} \text{Li}_2\text{O} + \text{H}_2\text{O}$
Answer: (d)
34. The rate of breathing of a child of 5 years is about:
(a) 44 times / minute (b) 40 times / minute
(c) 25 times / minute (d) 20 times / minute
Hints: As the age increases, the breathing rate decreases.
Answer: (c)
35. The property of the moving object by virtue of which it exerts force on the object that tries to stop it is:
(a) inertia of the body
(b) quantity of motion of body
(c) Acceleration of body (d) All of these
Answer: (a)
36. Refractory bricks used for furnace lining are formed by mixing and drying
(a) Mg O and clay (b) MgCO₃ and clay
(c) MgSO₄ and clay (d) MgCO₃ CaCO₃
Hints:
Answer: (a)
37. The middle lamella of cell-wall is



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composed of:

- (a) Cellulose (b) pectin (c) Lignin
(d) Murein

Hints: pectin is a dark gelatinous material.

Cellulose is the component of primary wall. Lignin is thickening material and murein is characteristic cell wall combination of bacterial cell.

Answer: (b)

38. The dot product of force and velocity is equal to:

- (a) power (b) impulse
(c) couple (d) Momentum

Hints: $\text{power} = \frac{w}{t} = \frac{\vec{F} \cdot \vec{D}}{t} = \vec{F} \cdot \frac{\vec{D}}{t} = \vec{F} \cdot \vec{v}$

Answer: (a)

39. The electronegativity of [1]A element first decreases and then increases. This behavior is due to poor shielding of:

- (a) s – electron (b) p – electron
(c) d – electron (d) f – electron

Answer: (c)

40. Nicotine in tobacco:

- (a) decreases the heart rate
(b) decreases blood pressure
(c) block the transport of oxygen
(d) paralyzes cilia

Answer: (d)

41. Your _____ too long: you had better go to the hairdresser today

- (a) hair is (b) hair are (c) hairs are
(d) hairs is

Hints: “hair” is uncountable noun and takes singular verb “is”

Answer: (a)

42. The escape velocity from the earth gravitational field depends upon:

- (a) rotation of earth (b) mass of body

(c) radius of earth (d) Mass of earth

Hints: $v_{es} = \sqrt{2Rg}$ Radius of earth.

Answer: (c)

43. Sodium tetraborate
 $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ is

- (a) Colemanite (b) Borax
(c) Diaspore (d) bauxite

Hints: sodium Tetraborate is borax or Tincal

Answer: (b)

44. Stream of chloroplast carries the fixation of:

- (a) Nitrogen (b) Oxygen (c) Carbon monoxide
(d) carbon dioxide

Hints: the dark reaction of photosynthesis involves fixation of CO_2 which occurs in stroma.

Answer: (d)

45. If the velocity of a body becomes half, the kinetic energy of the body will become:

- (a) one fourth (b) double
(c) four times (d) half

Hints: $\text{KE} = \frac{mv^2}{2}$ if $v' = \frac{v}{2}$, then $\text{KE} = \text{KE}/4$

Answer: (a)

46. $2\text{Al}_{(s)} + \text{NaOH}_{(aq)} + 2\text{H}_2\text{O} \rightarrow 2\text{NaAlO}_2_{(aq)} + 3\text{H}_2_{(g)}$

The above reaction is slow in the start but speeds up after sometimes. This is because of:

- (a) The reaction is exothermic and the heat generated speeds up the reaction

(b) The hydrogen liberated during the reaction acts as a catalyst

(c) The protective coat of oxide layer of the aluminum dissolves and the metal surface is exposed to



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thereactant

(d) Sodium aluminate is highly soluble, therefore it helps the reaction move in the forward direction

Hints: Al reacts with oxygen and forms a protective coat of Al_2O_3 , which keep aluminium safe from further oxidation hence making it less reactive.

Answer: (c)

47. The valve between right atrium and right ventricle is called:

- (a) bicuspid valve (b) tricuspid valve
(c) pulmonary valve (d) semi lunar valve

Hints: the valve between right atrium and right ventricle is tricuspid valve because it is made up of three flaps.

Answer: (b)

48. The angular velocity for daily rotation of the earth is:

- a) $\frac{\pi}{3}$ radian.hr⁻¹ b) $\frac{\pi}{6}$ radian.hr⁻¹
c) $\frac{\pi}{12}$ radian.hr⁻¹ d) 12π radian.hr⁻¹

Hints: As $t = \frac{2\pi}{\omega} \Rightarrow \omega = \frac{2\pi}{T} = \frac{2\pi}{24} = \frac{\pi}{12}$ radian.hr⁻¹

Answer: (c)

49. Sodium Carbonate when fused with sand forms sodium silicate which is commonly known as:

- (a) Soda glass (b) water glass
(c) Jinn glass (d) pyrex glass

Hints: $Na_2CO_3 + SiO_2 \rightarrow Na_2SiO_3 + CO_2$

Na_2SiO_3 : Water glass. Silicate is soluble in water

Answer: (b)

50. Anthocyanins are various types of colourful pigments present in the:
(a) chloroplasts (b) chromoplasts
(c) leucoplasts (d) vacuoles

Hints: Anthocyanins are red purple or blue pigment that protect plant from light stress. The bluish pigments found in chromoplasts are phycoerythrin.

Answer: (d)

51. You can always count on me. I will not let you _____

- (a) alone (b) down (c) off (d) through

Hints: "let you down" means to disappoint someone

Answer: (b)

52. The weight of a pilot when diving down in a jet plane with an acceleration of 9.8 m/s^2 will become:

- (a) Double (b) half (c) Negative (d) zero

Hints: $T = mg - ma$, as $g = a$, therefore $T = 0$

Answer: (d)

53. Silicones are resistant to chemical attack and are used in/as

- (a) paints (b) varnishes
(c) water proofing fabrics (d) all of the above

Hints: Silicones are highly water repellents.

Answer: (c)

54. Antibodies are produced by:

- (a) red blood cells (b) platelets
(c) β -lymphocytes (d) Hormones

Hints: β -lymphocytes produce antibodies which are protein in nature.



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displacement as well as the direction of motion in simple harmonic motion is the

- (a) phase angle (b) angular frequency

(c) path difference (d) none of these
Answer: (a)

66. The formula of mustard gas is:
(a) $(C_2H_2Cl_2)_2S$ (b) $(C_2H_4Cl_2)_2S$
(c) $(C_2H_3Cl_2)_2S$ (d) $(C_2H_4Cl)_2S$
Hints: $Cl - CH_2 - CH_2$

Answer: (d)

67. The amount of energy in food is measured in:

- (a) ATP (b) Calories
(c) ADP (d) Carbohydrates

Answer: (b)

68. The magnitude of the periodic force, which the simple pendulum exerts on the suspension point, depends upon:

- (a) length of the pendulum
(b) time period of vibration of pendulum
(c) mass of the bob of pendulum
(d) value of 'g'

Hints: $T = 2\pi \sqrt{\frac{l}{g}}$

Answer: (d)

69. All gases below are monoatomic except:

- (a) H (b) He (c) Ne (d) Xe

Hints: As hydrogen exists in diatomic molecular form H_2 , so H is unstable.

Answer: (a)

70. The inherit form of immunity through mother's milk is the:

- (a) active immunity (b) innate immunity

(c) passive immunity (d) Acquired

immunity

Hints: the inherit form of immunity through mother's milk passive immunity.

Answer: (c)

71. Waseem _____ this him as MD for many years, but he is rather unhappy with his salary

- (a) is working in (b) is serving
(c) is working for (d) has been working

Hints: present perfect continuous tense.

Answer: (d)

72. When the pressure in a medium increases, the speed of sound in that medium:

- (a) decreases (b) increases
(c) does not change
(d) sometimes increases and sometime decreases

Answer: (c)

73. Choose the correct name of Ba_2XeO_4

- (a) Barium Xenate (b) Barium Xenthate
(c) Barium Prexenate (d) Barium perxenthate

Answer: (d)

74. Which of the following is NOT an innate behavior?

- (a) a body mammal sucking milk
(b) a dog looking for its food dish
(c) a worm moving away from bright light

(d) a spider spinning a web

Hints: Dog looking for its food dish is a behavioral pattern condition reflex. This is learned behavior.

Answer: (b)



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75. The number of loops in stationary waves depends upon:
(a) velocity of waves (b) wavelength of waves
(c) nature of the medium (d) frequency of waves
Answer: (d)
-
76. The electronic configuration of Cu(29) is:
(a) $3s^2 3p^6 3d^{10} 4s^1$ (b) $3s^2 3p^4 3d^9 4s^2$
(c) $3s^2 3p^4 3d^8 4s^2$ (d) $3s^2 3p^4 3d^9 4s^2$
Hints: Electronic configuration contain half-filled or fully filled orbitals are most stable so $3d^{10}$ is fully filled and $4s^1$ is half filled.
Answer: (a)
-
77. Entamoeba belongs to the phylum:
(a) sporozoa (b) sarcodina
(c) mastigophora (d) microspore
Answer: (b)
-
78. When the light enters from air to glass, it suffers a change in the
(a) wavelength of light (b) speed of light
(c) frequency of light
(d) wavelength and speed of light
Answer: (d)
-
79. The highest oxidation state of Manganese $3s^2 3p^4 3d^5 4s^2$ in its compounds is:
(a) +2 (b) +5 (c) +7 (d) +8
Hints: manganese may show maximum + 7 oxidation state in $KMnO_4$
Answer: (c)
-
80. A nonspecific defense reaction to tissue damage caused by injury or infection is known as:
(a) active immunity (b) the inflammatory response (c) cell mediated immunity (d) passive immunity
Answer: (b)
-
81. Tahira = as well as her brother _____ responsible for the loss and they must be made to make up for it:
(a) is (b) are (c) were (d) have been
Hints: "as well as" can't make the nouns plural and that's why "is" is the correct choice.
Answer: (a)
-
82. When the light is moving from rare medium to denser medium on reflection it suffers a phase change of
(a) 180° (b) 120° (c) 90° (d) 0°
Answer: (a)
-
83. The oxidation power of halogen depends upon:
(a) energy of dissociation (b) electron affinity of atoms
(c) hydration energies of ions (d) all of the above
Answer: (d)
-
84. nuclear mitosis occurs in the kingdom of:
(a) Monera (b) Protista (c) Plantae (d) fungi
Answer: (d)
-
85. We can hear sound around the corner but cannot see because of:
(a) interference (b) diffraction (c) polarization (d) dispersion
Answer: (b)
-
86. All compounds are organic except
(a) $(H_2N)_2CO$ (b) NH_4CNO (c) CH_3NO_2 (d) $C_2H_5N_2HSO_4$
Answer: (b)
-
87. The protein that helps other cells



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- Answer: (b)
96. The color of coordination compound bisdimethylglyoxime nickel(II) is:
(a) red (b) blue (c) orange (d) black
Answer: (a)
97. Club-mosses are also called
(a) Psilopsida (b) Sphenopsida
(c) Lycopsida (d) Pteropsida
Hints: they have club-shaped strobili + mass like leaf.
Sphenopsida are called Horse tails.
Pteropsids are ferns & seed plants
psilopsids are forked shaped leafless plants.
Answer: (c)
98. For all irreversible process, the entropy of the system
(a) decreases (b) remains constant
(c) is zero (d) increases
Answer: (d)
99. Choose the compound tetra amine aqua chloro cobalt(III) chloride:
a) $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})(\text{Cl}_2)]\text{Cl}_3$
b) $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})(\text{Cl}_2)]\text{Cl}$
c) $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})(\text{Cl}_2)]\text{Cl}_2$
d) $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})(\text{Cl}_2)]\text{Cl}_2$
Answer: (d)
100. Hormones produced from cholesterol are called
(a) protein hormones (b) Non steroid hormones
(c) steroid hormones (d) peptide hormones
Answer: (c)
101. He _____ before the interview board.
(a) was afraid to appear
(b) was afraid of appearing
(c) was afraid of appearing
(d) feared appearance
- Hints: After "afraid" preposition "of" is used.
Answer: (b) & (c)
102. The correct expression for the coulomb's force is:
a) $\vec{F} = \frac{1}{4\pi\epsilon_0} \times \frac{q_1q_2}{r^2} \hat{r}$ b) $\vec{F} = \frac{1}{4\pi\epsilon_0} \times \frac{q_1q_2}{r^3} \hat{r}$
c) $\vec{F} = \frac{1}{4\pi\epsilon_0} \times \frac{q_1q_2}{r^2} \vec{r}$ d) $\vec{F} = \frac{1}{4\pi\epsilon_0} \times \frac{q_1q_2}{r^2}$
Answer: (b)
103. the wave nature of an electron is illustrated by its:
(a) photoelectric effect (b) Compton effect
(c) penetrating effect (d) diffraction
Hints: Diffraction wave phenomenon.
Answer: (d)
104. Lycopersicon esculentum is commonly known as:
(a) Gram (b) tomato (c) potato (d) red paper
Hints: Gram (cicer arietinum), potato (solanum).
Answer: (b)
105. The Potential gradient between the two charged plates having, separation of 0.5cm and potential difference of 12volts is:
(a) 240 NC⁻¹ (b) 24 NC⁻¹
(c) 2.4 NC⁻¹ (d) 2400NC⁻¹
Hints: $E = \frac{\Delta v}{\Delta r} = 24\text{NC}^{-1}$
Answer: (b)
106. The conversion of carbonate to urea is:
(a) slow and exothermic (b) fast and exothermic
(c) slow and endothermic (d) fast and endothermic



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- Answer: (c)
-
107. The rate of metabolism is regulated by:
(a) PTH (b) thyroxine (c) aldosterone (d) calcitonin
Hints: thyroxine enhances oxidation and heat production.
Answer: (b)
-
108. Ohm x Farad is equivalent to:
(a) second (b) weber (c) henry (d) tesla
Hints: Ohm x farad = RC = time.
Answer: (a)
-
109. vehicular emission that is major environmental concern is:
(a) CO₂ (b) CO (c) low hydrocarbons (d) All of them
Answer: (a)
-
110. Plant cells synthesize sugar in the:
(a) Thylakoid (b) grana (c) stroma (d) crista
Hints: CO₂ fixation into glucose occur in stroma
Answer: (c)
-
111. He said, —If I were you, I would protest! can be indirectly reported as:
(a) if he had been me, he would have protested
(b) he advised us to protest
(c) if he were me, he would protest
(d) if he had been I, he would have protested
Hints: Here the conditional structure of a sentence is given in the reported speech.
Answer: (d)
-
112. A wire of uniform cross section A, length l and resistance R is cut into two equal pieces. The resistivity of each piece will be:
(a) the same (b) one fourth (c) double (d) one half
Answer: (a)
-
113. Tetraethyl lead (C₂H₅)₄Pb is used as antiknock agent and is abandoned because of its hazardous product during the combustion of fuel. The hazardous product is: (a) CO₂ (b) CO (c) lead (d) free radical ethyl (C₂H₅)
Hints: Lead is called as heavy metal and is carcinogenic.
Answer: (c)
-
114. Which sequence correctly describes the route sperm take through the human male reproductive system?
(a) vas deferens, urethra, epididymis
(b) Epididymis, vas deferens urethra
(c) Epididymis, urethra, vas deferens
(d) urethra, epididymis, vas deferens
Hints: Epididymis is a coiled where sperm mature it lead into a long tube vas deferens which carries sperm into a short narrow tube or urethra.
Answer: (b)
-
115. Two metallic conductors have the same value of resistivity. These conductors can be differentiated from the values of their:
(a) temperature coefficient (b) resistances
(c) conductance (d) conductivity
Answer: (a)
-
116. Select the correct formula of 2-methyl pentane:



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modulus
(c) bulk's modulus (d) shear's modulus

Answer: (a)

153. A sample containing aluminum weighing 10.0g yielded 2.0g of aluminum sulphide. What is the percentage of aluminum (atomic mass = 27.0) in the sample?
Sulphur (atomic mass = 32.0)
a) $\frac{2 \times 100}{10.0}$ b) $\frac{2.0}{10} \times \frac{2 \times 27}{150} \times 100$ c) $\frac{2.0}{10.0} \times \frac{10.0}{27} \times 100$ d) $\frac{2}{10.0} \times \frac{150}{3 \times 27} \times 100$
Hints: % of Al = $\frac{2}{10} \times \frac{2 \times 27}{150} \rightarrow \text{Al}_2\text{S}_3$
= 150, Al = 27
Answer: (b)

154. During replication which sequence of nucleotides would bond with the DNA sequence TATGA?
(a) AUAGA (b) ATACA (c) UAUGA (d) AACT
Hints: In DNA, A is complementary to T and C is complementary of G
Answer: (d)

155. The substance which undergoes plastic deformation until it breaks is:
(a) ductile substance (b) brittle substance
(c) plastic substance (d) all of these
Answer: (a)

156. Choose the region of the spectrum which would be used to determine the structure of crystalline solids:
(a) visible (b) infrared (c) X-rays (d) ultraviolet
Answer: (c)

157. All of the following are growth hormones except:
(a) Phytohormones (b) Gibberellins
(c) auxins (d) Cytokinins

Hints: phytochrome is a protein & flowering hormones.

Answer: (a)

158. The temperature at which the domains of the ferromagnetic substances disorient is;
(a) critical temperature (b) absolute temperature
(c) Curie Temperature (d) normal temperature
Answer: (c)

159. Which one of the following most closely resembles an ideal gas?
(a) Xe (b) H₂ (c) CO₂ (d) He
Hints: As He has weakest attractive force will behave more ideally.
Answer: (d)

160. A cross between dissimilar individuals to bring together their best characteristics is called:
(a) genetic engineering (b) hybridization
(c) inbreeding (d) sequencing
Hints: Hybridization is a cross between individual of a different species which are genetically different
Answer: (b)

161. Secrets leak when the _____ are many
(a) enemies (b) ill-wishers (c) confidants (d) detractors
Hints: Confidants are those people on whom one trusts. When there are too many confidants, greater are the chances for the secret to be disclosed.
Answer: (c)

162. The process by which the potential barrier of the depletion region can be increased or decreased is called:



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- (a) amplification (b) biasing (c) modulation (d) doping
Answer: (b)
-
163. According to molecular orbital theory, which of the following is most unstable molecule?
(a) He_2^+ (b) H_2^- (c) H_2^+ (d) H_2
Hints: Molecular orbital diagram for H_2^- will be $\text{IV}(\text{ls}^2) \text{V}(\text{ls}) \text{V}(\text{ls})$
 $\text{IV} \text{ls}^2$ Band order: $\frac{2-2}{2} = 0$
Answer: (d)
-
164. In grapes and mangoes, the inflorescence is:
(a) panicle (b) multiparous cyme (c) capitulum (d) umbel
Hints: Capitulum in sunflower. Umbel is found within the members of umbelliform family. E. g. Hyohocotyl and multi process/cyme is found in euphorbia.
Answer: (a)
-
165. The color of light emitted by light emitting diode depends upon:
(a) forward voltage (b) reverse current
(c) forward current (d) type of semiconductor
Answer: (d)
-
166. How many grams of water are produced in burning 2.24 dm³ of hydrogen at STP?
(a) 180g (b) 81.g (c) 1.8g (d) 0.18g
Hints: $\text{H}_2 + \frac{1}{2} \text{O}_2 \rightarrow \text{H}_2\text{O}$, Moles of $\text{H}_2 = \frac{V}{22.4} = \frac{2.24}{22.4} = 0.1$ n $\text{H}_2 = 0.1$
moles of $\text{H}_2 : \text{H}_2\text{O}$
1 : 1
0.1 : 0.1 moles of $\text{H}_2\text{O} = 0.1$ moles
Mass = n × M = 0.1 × 18 = 1.8g
Answer: (c)
-
167. Organism that contain genes from other organisms are called:
(a) mutagenic (b) transgenic (c) Clones (d) sequencing
Answer: (b)
-
168. The combination of AND and NOT gate is called
(a) NAND gate (b) NOR gate (c) Or gate (d) XOR gate
Answer: (a)
-
169. 50 cm³ of KOH solution was titrated against 1.0M HCl using phenolphthalein as an indicator. The acid used was found to be 7.5 cm³. the concentration of KOH solution is:
(a) 0.15 M (b) 1.5 M (c) 0.75 M (d) None
Hints: $\text{KOH} + \text{HCl} \rightarrow \text{KCl} + \text{H}_2\text{O}$
 $\text{KOH} = \text{HCl} \quad v_1 = 50 \text{ cm}^3 \quad \frac{M_2 V_1}{n_1} = \frac{M_1 V_2}{n_2} \rightarrow \frac{M_1 \times 50}{1} = \frac{1 \times 7.5}{1}$
 $M_2 = 1 \text{ M}, V_2 = 7.5, M_1 = 0.15 \quad n_1 = 1, n_2 = 1$
Answer: (a)
-
170. Ozone layer is present in the:
(a) troposphere (b) stratosphere (c) mesosphere (d) atmosphere
Answer: (b)
-
171. The guard looked at me _____ and then asked me to identify myself.
(a) dangerously (b) hurriedly (c) suspiciously (d) nervously
Hints: "suspiciously" means doubtfully.
Answer: (c)
-
172. If the temperature of the black body becomes double the intensity of radiation from it will become:
(a) double (b) four times (c) six times (d) sixteen times
Hints: $I = \sigma T^4 \quad I \rightarrow T^4 \quad (2)^4 = 16$



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- due to:
(a) Osmosis (b) Diffusion
(c) Expansion (d) Decomposition
15. Equisetum is the living member of:
(a) Sphenopslda (b) Psilopsida
(c) Pteropsida (d) Lycopsida
16. Aldehydes may be distinguished from ketones by the use of:
(a) Hoffman reagent (b) Grignard reagent
(c) Tollens reagent (d) Cannizaro reagent
17. We were moved _____ the cat struggling to live her kitten.
(a) See
(b) Saw
(c) To have seen
(d) To see
18. Neutrons can be slowed down if the stationary targets are:
(a) B particles
(b) Photons
(c) Protons
(d) Atoms
19. Hydra reproduces asexually by;
(a) Binary fission (b) Multiple fission
(c) Budding (d) Regeneration
20. We used $Pb(C_2H_5)_4$ in the gasoline to reduce:
(a) Consumption of fuel
(b) Price of fuel
(c) Octane number of fuel
(d) Knocking of engine
21. If we pass current through the sucrose solution the galvanometer will not show any deflection because sucrose molecules:
(a) Move towards cathode
(b) Move towards anode
(c) React with water
(d) Remain neutral
22. To improve the jumping record a long jumper should jump at an angle of:
(a) 30°
(b) 45°
(c) 60°
(d) 90°
23. All of the following tests are used to identify aldehydes except
(a) Tollen's test (b) Fehling test
(c) Bayer test (d) Benedict test
24. At the eleventh hour means:
(a) One hour before twelve
(b) At the last moment
(c) At eleven at night
(d) Eleven hours ago
25. The turn table is a part of
(a) Spectrometer (b) Telescope
(c) Microscope (d) Interferometer
26. During cellular respiration $NADH_2$ produces
(a) 2 ATP (b) 3 ATP (c) 4 ATP
(d) 5ATP
27. What is the concentration of $[H^+]$ in HNO_3 acid solution with PH of 3?
(a) 3
(b) -3
(c) - antilog [3]
(d) 10^{-3}
28. Doppler's effect is applicable to:
(a) Sound waves
(b) Light waves
(c) Light waves
(d) Both sound and light waves
29. For better resolution and clear visibility through microscope we use
(a) Longer wavelength light
(b) Shorter wavelength light



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100. The values of ionic product K_w are 0.64×10^{-14} at 180°C , 1×10^{-14} at 25°C from this may be derived that
- (a) Endothermic process
 - (b) Exothermic process
 - (c) Vaporization process
 - (d) Change of H_2O into O_2 and H_2
-
101. Newton second law of motion establishes relationship between.
- (a) Force and acceleration
 - (b) Mass and force
 - (c) Mass and velocity
 - (d) Acceleration and mass
-
102. If father of a baby is hemophilic and mother is a carrier then chances of the baby in inheriting the disease will be:
- (a) 0% (b) 50% (c) 75% (d) 100%
-
103. A constellation is made up of stars a troupe is made up of:
- (a) Starlets
 - (b) Speakers
 - (c) Actors
 - (d) Beggars
-
104. Condensation of chromosomes reaches to its peak during:
- (a) Prophase
 - (b) Metaphase
 - (c) Anaphase
 - (d) Telophase
-
105. Which of the following is a characteristic of an isothermal change?
- (a) Enthalpy is constant
 - (b) Temperature is constant
 - (c) Pressure is constant
 - (d) No heat enters or leaves the system
-
106. The traffic signals are red while the eyes are more sensitive to yellow because
- (a) Yellow has less speed
 - (b) Red light refracts less due to its long wavelength
 - (c) Actors
 - (d) Beggars
-
107. The hormone that causes seed and bud dormancy in plants is called
- (a) Auxins (b) Ethylene
 - (c) Abscisic acid (d) Gibberellins
-
108. If a Cu bearing material weighing 40g yields 5g Cu (mw. 76.55) the percentage of Cu (at.wt. 63.55) in the sample is:
- (a) $5/40 \times 100$ (b) $40/5 \times 79.55/63.55 \times 100$
 - (c) $5/40 \times 79.55/63.55 \times 100$ (d) $5/40 \times 79.55/63.55 \times 100$
-
109. He is rather a teacher he never accepts the students' excuses.
- (a) Incredulous (b) Unbelievable
 - (c) Interesting (d) Indiscriminate
-
110. The device which can be used for the precise measurement of wavelength is:
- (a) Grating plate (b) Polaroid
 - (c) Prism (d) Michelson interferometer
-
111. All of the following are non-renewable resources of energy EXCEPT.
- (a) Forests
 - (b) Iron
 - (c) Petroleum
 - (d) Natural gas
-
112. Acids are classified as monoprotic or polyprotic which of the following is a polyprotic acid?
- (a) $\text{CH}_3\text{CO}_2\text{H}_{(\text{aq})}$
 - (b) $\text{HOCl}_{(\text{aq})}$
 - (c) HCHO_2



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PHYSICS CHEMISTRY

KEY POINTS & MCQS

Contents:

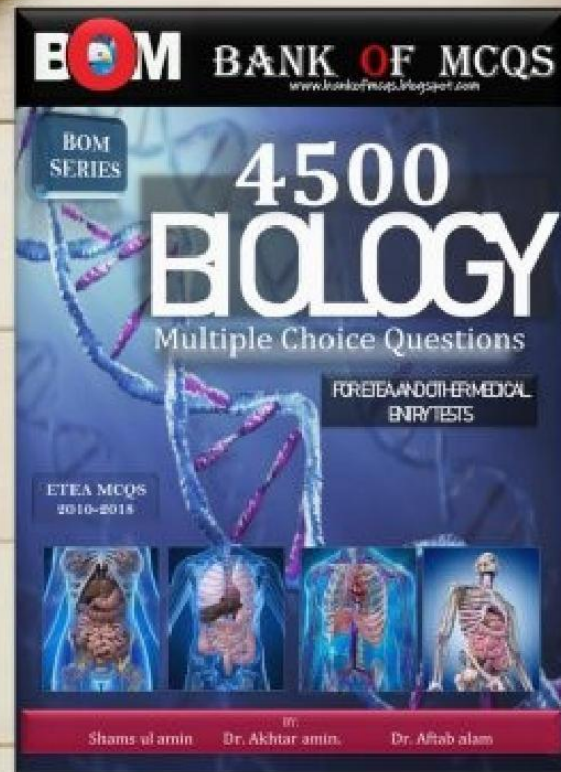
- ✓ Physics key points
- ✓ Chemistry key points
- ✓ Chemistry MCQs
- ✓ Physics formulas

By:
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Key Features:

1. Easy language
2. For class 11 and 12
3. Revise chapter in 5 min.
4. Revise whole subject in single day.
5. To the point
6. Cover 80% of the material from this book.
7. Contain golden mcqs of chemistry.
8. Chapterwise key points

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- repulsion
(c) only force of attraction
(d) only force of repulsion
-
43. If the temperature of the source of heat increases the efficiency of a Carnot engine:
(a) Increases (b) Decreases
(c) Remains constant (d) None of these
-
44. $Y = -2^x$ is the reflection of:
(a) $y = \frac{1}{2}^x$
(b) $Y = 2^x$
(c) $Y = 2^{-x}$
(d) $Y = 1/-2x$
-
45. During the hydrolysis of 18g of acidified water hydrogen released at cathode is:
(a) 18 L (b) 22.4L (c) 11.2L (d) 1L
-
46. At constant temperature if the pressure of the gas is doubled its volume becomes.
(a) One half (b) Double
(c) Four times (d) Remains the same
-
47. The physical quantity which produces angular acceleration in body.
(a) Force (b) Centripetal force
(c) Impulse (d) Torque
-
48. When dilute HNO_3 is treated with metals like Cu Ag Pb besides their nitrates which one of the following gases is obtained?
(a) N_2
(b) NO
(c) NO_2
(d) N_2O
-
49. The span of broad jump depends upon:
(a) mass of jumper
(b) Vision of jumper
(c) Angle of projection of jumper
(d) Height of jumper
-
50. The acceleration due to gravity on a planet having a mass and radius half of the earth will be equal to:
(a) $2g$ (b) g (c) $g/2$ (d) $g/4$
-
51. First crystalline hormone is:
(a) Thyroxine (b) Noradrenalin
(c) Adrenalin (d) All of the above
-
52. Which one has a bond formed by the overlap of an SP^2 hybrid orbital with a SP hybrid orbital?
(a) 3CH_3
(b) $\text{CH}_2=\text{C}=\text{CH}_2$
(c) $\text{CH}_2=\text{CH}_2$
(d) $\text{CH}_3\text{C}=\text{CCH}_2\text{CH}_3$
-
53. One light year is equal to:
(a) $946 \times 10^{15} \text{ km}$
(b) $9.46 \times 10^{15} \text{ m}$
(c) $9.46 \times 10^{15} \text{ cm}$
(d) $9.46 \times 10^{15} \text{ ft}$
-
54. $\lim_{x \rightarrow \infty} \left(\frac{2x^2 + 5x + 1}{20x^2 - 1} \right) = 1$
(a) $1/10$
(b) ∞
(c) -1
(d) 0
-
55. ___ property was damaged by the typhoon
(a) Many (b) Much (c) More (d) Several
-
56. Evaporation occurs at:
(a) All
(b) Low temperature
(c) High temperature
(d) Absolute temperature
-
57. Metallic potassium could not be prepared from a potassium iodide solution by means of a chemical reducing agent because



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- Hints: c) Because Nitro group (NO_2) attached with benzene decreases reactivity of benzene.
161. The critical temperature (T_c) of oxygen is
(A) -147.1°C
(B) -183°C
(C) -239.9°C
(D) -118.8°C
Hints: d) It is given in literature
 $T_c = -118.8^\circ\text{C}$
162. The police are looking ___ the recent state of burglaries.
(A) into (B) to (C) at (D) for
Hints: a) into
163. If m_1 and m_2 are the slopes of two lines L_1 and L_2 respectively, then the angle from L_1 to L_2 is given by:
(A) $\tan \theta = \frac{m_2 - m_1}{1 + m_2 m_1}$
(B) $\tan \theta = \frac{m_2 + m_1}{1 - m_2 m_1}$
(C) $\cot \theta = \frac{1 + m_2 m_1}{m_2 - m_1}$
(D) $\cot \theta = \frac{1 + m_2 m_1}{1 - m_2 m_1}$
Hints: a) $m_1 = \text{slope of } L_1$
 $m_2 = \text{slope of } L_2$
164. Alkyl halide in which carbon atom to which halogen is attached is in turn bonded to one carbon atom. The alkyl halide is :
(A) Primary alkyl halide
(B) Secondary alkyl halide
(C) Tertiary alkyl halide
(D) None of the above
Hints: b)
165. A copper bearing material weighing 20g yielded 2.5g CuO. The percentage of copper (Atomic mass = 63.55) in the sample is:
(A) $\frac{2.5 \times 100}{20}$
(B) $\frac{63.55 \times 2.5 \times 100}{20 \times 79.55}$
(C) $\frac{79.55 \times 20}{2.5 \times 79.55 \times 100}$
(D) $\frac{40 \times 63.55}{20 \times 79.55 \times 100}$
Hints: d) Actual yield = 139.6
Yield = 2.5 g of Cu
Formal
%age = $\frac{\text{Actual Yield}}{\text{Theoretical Yield}}$
166. Which is NOT true in Bohr's Theory?
(A) Cannot explain the fine structure of the hydrogen atom.
(B) Cannot explain spectrum of atoms other than hydrogen
(C) Cannot explain the Zeeman effect
(D) Is in accordance with Heisenberg's uncertainty principle
Hints: d) Because Bohr's model is against of Heisenberg theory.
167. She said to him, —where did you go yesterday! select the correct indirect speech.
(A) She asked him where he had gone the previous day.
(B) She told him where he had gone the previous day.
(C) She asked him where had he gone the previous day.
(D) She asked me where he had gone yesterday.
Hints: a) she asked him where he had gone the previous day.
168. Generally $B \cdot B^t$ is a:
(A) Symmetric matrix
(B) Skew symmetric matrix
(C) Singular matrix
(D) Additive inverse
Hints: b) Skew symmetric matrix



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- coil, its coefficient of self – induction;
- (A) Increases (B) Decreases
(C) Remains the same (D) Become zero
Hints: a) $L = \mu_0 n^2 IA$
180. The e.m.f that appears in Faradays law is;
- (a) Around a conducting circuit
(b) Around the boundary of the surface used to compute the magnetic field
(c) Throughout the surface used to compute magnetic flux
(d) Perpendicular to the surface used to compute magnetic flux
Hints: b) Around the boundy of the surface used to compute the magnetic field
181. Mass of 1molecule of oxygen is;
- (A) 32g
(B) 16g
(C) $32/6.023 \times 10^{23} \text{g}$
(D) $32 \times 6.023 \times 10^{23} \text{g}$
Hints: a) Mass of molecule of O_2 ($16 \times 2 = 32$) 32 g OF $O_2 = 6.022 \times 10^{23}$ molecule OR $32 \times 6.022 \times 10^{23} \text{g}$
182. Select the correct formula of chloropentaqua chromium (III) chloride;
- (A) $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_3$
(B) $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2$
(C) $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}_2]$
(D) $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}_3]\text{Cl}$
Hints: d) $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}_3]\text{Cl}$
183. If a, b, c are the sides of a triangle and α, β, γ are the respective angles, then area of the triangle is:
- (a) $\frac{1}{2} a^2 \text{Sin} \alpha$
(b) $\frac{1}{2} b^2 \text{Sin} \gamma$
(c) $\frac{1}{2} c^2 \text{Sin} \beta$
(d) $\frac{1}{2} bc \text{Sin} \alpha$
Hints: a) $\frac{1}{2} a^2 \text{sin} \alpha$
184. In a nuclear reaction ${}_{92}^{238}\text{U} \rightarrow {}_Z^A\text{X} + \text{h}$ the value of A and Z are
(A) A= 234, Z=94 (B) A=238, Z=94
(C) A=234, Z=90 (D) A= 238, Z= 90
Hints: c) $238-4=234=A$ $92-2=90=Z$
185. Possible units of entropy are;
(A) J (B) J/K (C) J-1 (D) Cal/K
Hints: b) $\Delta S = \frac{\Delta Q}{\Delta T} = \frac{J}{K}$
186. The specific heat at constant pressure of an ideal gas depend on;
- (A) The temperature (B) The pressure
(C) Volume (D) None of the above
 $\Delta Q_p = nC_p \Delta T$, $\Delta Q_p = \text{constant} \Delta T$
Hints: a) $\Delta Q_p \propto \Delta T$
187. Choose the correct order of the rate of diffusion of the four gases;
- (A) $\text{CO} > \text{NO}_2 > \text{Cl}_2 > \text{SO}_2$
(B) $\text{CO} > \text{SO}_2 > \text{NO}_2 > \text{Cl}_2$
(C) $\text{CO} > \text{NO}_2 > \text{SO}_2 > \text{Cl}_2$
(D) $\text{SO}_2 > \text{Cl}_2 > \text{CO} > \text{NO}_2$
Hints: c) Gases having lighter mass will diffuse more diffusion $\propto \frac{1}{\sqrt{d}}$
188. Nitrobenzene reacts with fuming HNO_3 and H_2SO_4 keeping temperature 100°C . The product formed is;
- (A) (B)
(C) (D) All of the above
Hints: b) Nitrobenzene + fuming $\text{HNO}_3 + \text{H}_2\text{SO}_4$



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189. Anion of thioalcohol ($C_2H_5S^-$) generally undergoes substitution unlike $C_2H_5O^-$ that favours elimination reaction. This is because
(A) $C_2H_5O^-$ is more nucleophile than $C_2H_5S^-$
(B) $C_2H_5S^-$ is more nucleophile than
(C) $C_2H_5O^-$
(C) Both are equally good nucleophile but $C_2H_5S^-$ is more basic
(D) The factor is the steric hindrance
Hints: b) $C_2H_5S^-$ is more nucleophile than
190. The poem —The school boy is written by:
(A) William Blake (B) William Blake
(C) John Keats (D) Tennyson
Hints: a) William Blake
191. In purification of water the coagulant used is;
(A) $NiSO_4$
(B) $BaSO_4$
(C) $CuSO_4$
(D) Potash Alum
Hints: d) potash Alum.
192. Which of the following is iso – electronic pair?
(A) Ne and Na
(B) Ne and Mg^{2+}
(C) Al and C
(D) Ar and Ca
Hints: b) Iso electron means having same electron in valence shell Ne and Mg^{2+}
193. The correct sentence is;
(A) I came across a friend of yours the other day
(B) I came across a friend of yours' the other day
(C) I came across a friend of your the other day
(D) I came across a friend of your's the other day
Hints: a) I came across a friend of yours the other day.
194. What will be the equation of parabola having focus at F (0- 2) and directrix = 2 ?
(A) $x^2 = 2y$
(B) $y^2 = 2x$
(C) $x^2 = -8y$
(D) $y^2 = 8xy$
Hints: c) Equation of parabola $x^2 = -8y$
195. If $f(x, y, z) = e^x + \sin y + z$, then $\frac{\partial f}{\partial x} + \frac{\partial f}{\partial y} + \frac{\partial f}{\partial z}$ at the point (0, 0,0) is
(A) 0
(B) 1
(C) 3
(D) 5
Hints:
196. For a homogenous function (z) of degree n if $x \frac{\partial f}{\partial x} + y \frac{\partial f}{\partial y} = nz$, then this rule is
(A) Mean value theorem
(B) Euler theorem
(C) Taylor's theorem
(D) McLaurin's theorem
Hints: b) Euler theorem
197. Stiff material is characterized by
(A) High ultimate strength
(B) High proportional limit
(C) High young modulus



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MEDICAL PAPER 2015

- | S.No | MCQs |
|------|---|
| 1. | <p>The energy absorbed as heat by and ideal gas for an isothermal process is equal to:</p> <ol style="list-style-type: none">The work done by the gasThe work done on the gasChange in the internal energy of the gasZero, since the process in isothermal <p>Hints: a) as we know that
$dq = dE + PdV$
$dq = PdV$
The energy provided in isothermal process is totally consumed in work done by the gas.</p> |
| 2. | <p>It has been raining continuously last night.</p> <ol style="list-style-type: none">SinceForFromWithe) Hints: a) since |
| 3. | <p>Termites eat wood with the help of enzyme produced by :</p> <ol style="list-style-type: none">TrichonellaTripanosomaTrichonymphTrichina <p>Hints: c) Trichonympha is a genus of parabasslid protists that lives in intestine of most of termite species to breakdown cellulose in wood and plant fibers which are eaten by their hosts.</p> |
| 4. | <p>CSF is found in between:</p> <ol style="list-style-type: none">Pia mater and dura materPia mater and arachnoid materGrey mater and pia materDura mater and grey mater <p>Hints: b) cerebro spinal Fluid is found in Meninges layer of brain and spinal chord. Meninges is the system of 3 membranes i.e piamater, Dura Mater and Mracnoid mater. CSF is found between piamater and Arachnoid Mater.</p> |
| 5. | <p>Vernalization is the conversion of:</p> <ol style="list-style-type: none">Spring variety to the winter varietyWinter variety to the spring varietyWinter variety to the summer varietySummer variety to the winter variety <p>Hints: b) Vernalisation refers to the cooling of seed during germination in order to accelerate flowering. It shortens the vegetative periods of plants. So winter varieties of crop plants can be converted to spring varieties. It is mediated through vernalin which induce synthesis of Florigen.</p> |
| 6. | <p>Which region of electromagnetic spectrum is involved in nuclear magnetic resonance (NMR spectroscopy)</p> |



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maintain its pH constant?

- a) CH_3COOH and $(\text{NH}_4)_2\text{SO}_4$
- b) NH_3NO_3 and KNO_3
- c) NH_4OH and NH_4Cl
- d) NH_4OH and NaCl

Hints: c) It is a basic buffer and can be prepared by mixing a weak base and its salt with strong acid. Its pH is greater than seven.

27. π - π electronic transition occurs in molecules that have
- a) Double bond
 - b) Triple bond
 - c) Aromatic ring
 - d) All of the above

Hints: d) Unsaturation is necessary for π - π^* transition. Because it provides the π electron

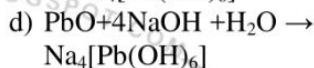
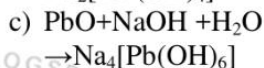
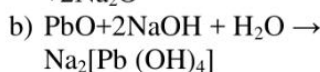
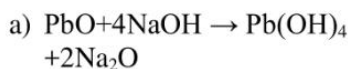
28. Select alkene of the following hydrocarbons:
- a) C_5H_{12}
 - b) C_5H_{10}
 - c) C_5H_8
 - d) C_4H_{10}

Hints: a) Apply the general formula for Alkane $\text{C}_n\text{H}_{2n+2}$

29. The wave nature of electrons is suggested by experiments on
- a) Line spectra of action
 - b) The production of x-rays
 - c) The photoelectric effect
 - d) Electron diffraction by crystalline material

Hints: d) Diffraction of electrons is similar to that of x-rays from crystal. Davisson and Germer experiment.

30. Choose the correct reaction:



Hints: d) $\text{PbO} + 4\text{NaOH} + \text{H}_2\text{O} \rightarrow \text{Na}_4[\text{Pb}(\text{OH})_6]$

31. The frequency of green light is 6×10^{14} Hz. Its wavelength is:

- a) 50 nm
- b) 500 nm
- c) 5000 nm
- d) 100 nm

Hints: b) As we know that $C = \nu\lambda$

$$\lambda = \frac{C}{\nu}$$

$$\lambda = \frac{3 \times 10^8 \text{ m/s}}{6 \times 10^{14} \text{ Hz}}$$

$$\lambda = 0.5 \times 10^{-6} \text{ m}$$

$$\lambda = 0.5 \times 10^{-6} \times 10^9 \text{ nm}$$

$$\lambda = 0.5 \times 10^3 \text{ nm}$$

$$\lambda = 500 \text{ nm}$$

32. One end of a cylindrical pipe has a radius of 1.5 cm, water stream (density = $1.0 \times 10^3 \text{ kg/m}^3$) steadily out at 7.0 m/s, the volume rate is:

- a) $4.9 \times 10^{-3} \text{ m}^3/\text{s}$
- b) $4.9 \text{ m}^3/\text{s}$
- c) $7.0 \text{ m}^3/\text{s}$
- d) $49 \text{ m}^3/\text{s}$

Hints: a) $AV = \pi r^2 V$

$$AV = (3.14)(1.5 \times 10^{-2})^2 \times 7$$

$$= 4.9 \times 10^{-3} \text{ m}^3/\text{s}$$

33. An incompressible liquid flows along the pipe with area of cross



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- b) BF_3
c) HCl
d) H^+
Hints: a) Because the N in NH_3 molecule contain one lone pair of electron.
56. Which one of following acids has a strong conjugate base?
a) CH_3COOH
b) HCl
c) HNO_3
d) H_2SO_4
Hints: a) Because the CH_3COOH is a weak acid therefore its conjugate base will be strong.
57. The behavior of ferromagnetic domains in an applied magnetic field gives rise to:
a) Hysteresis
b) Ferromagnetism
c) The curie law
d) Gauss's law for magnetism
Hints: a) Hysteresis topic Domain theory.
58. Which of the following electromagnetic radiation has photons with greatest momentum?
a) Blue light
b) Yellow light
c) X-rays
d) Radio wave
Hints: c) $f a \frac{1}{\lambda}$, $E a f$ As $p = mv$ as x- ray have high velocity therefore has greater momentum.
59. A LASER beam can be sharply focused because it is:
a) Highly coherent
b) Intense
c) Plane polarized
d) Highly directional
Hints: a) when coherent, then unidirection and intense.
60. Binding energy of nucleus is the energy that must be supplied to:
a) Remove nucleons
b) remove and α -particle
c) remove a β -particle
d) separate the nucleus into its constituent nucleons.
Hints: d) Binding energy required to separate the nucleous. $E = \Delta mc^2$
61. There are fish in this pond
a) many
b) much
c) any
d) more
Hints: a) many
62. Which of the following animal included in deuterostome?
a) Mytilus
b) Chaetopterus
c) Penguin
d) Jelly fish
Hints: c) There are four phyla of deuterostomes:
Phylum Chordata,
Phylum Echinodermata,
Phylum Hemichordata and
Phylum Xenacoelomorpha.
63. The chloroplast size is about,
a) 1-2 μM
b) 2-4 μM
c) 4-6 μM
d) 6-8 μM



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- b) 2-methyl-33pentene
c) 2-methyl-2-penten
d) 4,4-Dimethyl-2-pentene
Hints: a) 4-methyl-2-pentne
81. A particle of mass m has momentum p , its K.E will be:
a) mp
b) p^2m
c) p^2/m
d) $p^2/2m$
Hints: d) $K.E = \frac{p^2}{2m}$, $K.E = \frac{1}{2}mv^2 \times \frac{m}{m} = \frac{1}{2} \frac{m2v}{m} = \frac{p^2}{2m}$
82. The first lionization energy of an atom depends on:
a) Charge on nucleus
b) Screening effect
c) Electronic configuration
d) All of the above
Hints: d) By definition ionization energy needs all.
83. For principle quantum number $n=3$ the value of magnetic qantum number will be:
a) 3
b) 6
c) 5
d) 7
Hints: c) $l = n-1 \rightarrow 1=3-1=2$, $ml = 2l+1$, $2 \times 2 + 1 = 5$
84. Fission fragments usually decay by emitting:
a) A-particles
b) Electrons and neutrons
c) Positron and neutrinos
d) Only neutrons
Hints: d) Only neutrons, fission reaction.
85. Nuclear fusion at the sun is increasing its supply of:
a) Hydrogen
b) helium
c) nucleons
d) neutron
Hints: b) helium
86. Any baryon is a combination of:
a) three quarks
b) two quarks
c) two quarks and an anti-quark
d) one quark and one anti-quark
Hints: c) Three quarks, proton + neutron = Baryan.
87. Choose the correct sentence:
a) as far as I know he bear a good moral character.
b) So far as I know, he bears a good moral character.
c) As long as I know, he bear good moral
d) Not that I know, he bear a good moral character.
Hints: b) so far as I know, he bears a good moral character.
88. The person is overweight ehen the body mass index is between.
a) 15 to 24.9
b) 17.5 to 24.9
c) 18.5 to 24.9
d) 25. To 29.9
Hints: d)
- | | | | | | | | |
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89. The blood flow in ml/minute during exercise to the brain is:
a) 1500 ml
b) 1600 ml
c) 1800 ml



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Hints: d) Mg is a secondary micronutrient while Fe, Cu, and Zn are micronutrients.

98. What is true about modern methods used in the determination of the structure of compounds?

- a) Accurate but more time consuming
- b) Accurate, rapid but chemicals are used in large amounts
- c) Accurate, rapid but sophisticated and complicated
- d) Accurate, simple and less time consuming

Hints: c) Accurate, rapid but sophisticated and complicated

99. 100% transmission in IR spectroscopy means:

- a) No absorption
- b) 50 % absorption
- c) 75 absorption
- d) 100 % absorption

Hints: a) 100% transmission means no absorbance but it does not occur usually.

100. The pH of 0.001 M aqueous solution of NaOH is:

- a) 6
- b) 13
- c) 11
- d) 12

Hints: c) $\text{PoH of } 0.001 = 10^{-3}$

$\text{PoH} = 1 - \log 10^{-3}$

$\text{PoH} = 3$

And we know

$\text{pH} + \text{PoH} = 14$

$\text{pH} = 14 - \text{PoH}$

$\text{pH} = 14 - 3$

$\text{pH} = 11$

101. In an unbiased Pn junction:

- a) The electric potential vanishes everywhere
- b) The electric field vanishes everywhere
- c) The diffusion current vanishes everywhere
- d) The diffusion and drift currents cancel each other.

Hints: c) The diffusion current vanishes everywhere

102. Two vectors \vec{A} and \vec{B} are such that $\vec{A} + \vec{B} = \vec{A} - \vec{B}$ then select the correct statement:

- a) $\vec{A} = 0$
- b) $\vec{B} = 0$
- c) Neither \vec{A} nor \vec{B} is zero
- d) None of the above

Hints: b) $\vec{A} = \vec{A}$ by definition of

$\vec{A} + 0 = \vec{A} - 0$

Subtraction of vectors.

103. He extolled the virtues of the Russian people.

[The underlined word means:]

- a) Admired
- b) Praised
- c) Censured
- d) Adopted

Hints: b) praised

104. Balantidium coli lives in the intestinal tract of:

- a) Pigs and rats
- b) Pigs and monkeys
- c) Rats and Dogs
- d) Cat and sheep

Hints: a) Balantidium coli is a



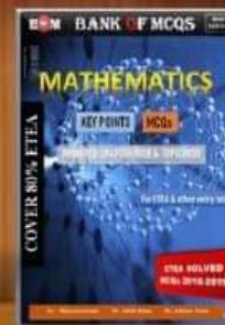
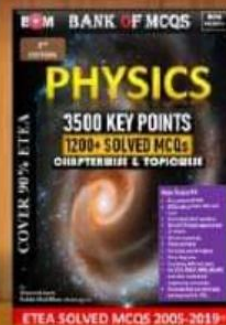
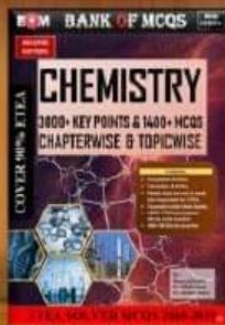
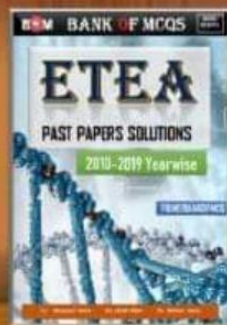
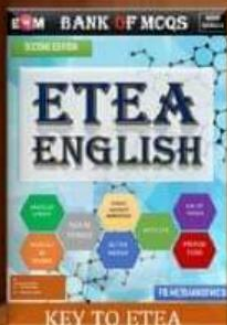
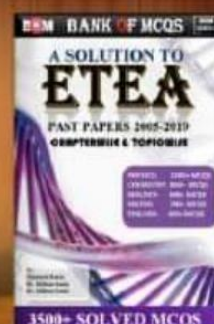
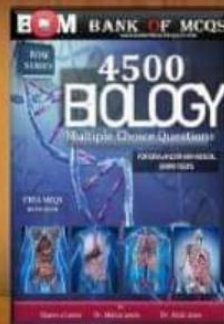
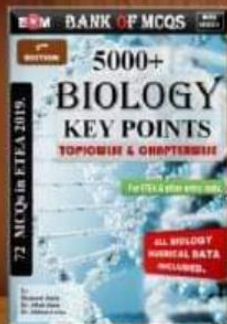
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- d) Rg
Hints: b) $v = \sqrt{gR}, g = v^2/R, v = \sqrt{gR}$
121. In an adiabatic process there is no:
a) Work done
b) Exchange of heat
c) Change in temperature
d) Change in internal energy
Hints: b) $\Delta Q = \Delta U + \Delta w, 0 = \Delta U + \Delta w$ by definition of adiabatic process.
122. The quantity $\frac{1}{2} \epsilon_0 E^2$ has the significant of:
a) Energy / farad
b) Energy / coulomb
c) Energy / volume
d) Energy / volt
Hints: c) Energy density = energy / volume
123. The rising price of electricity has affected the less fortunate.
a) Positively
b) Not
c) Adversely
d) Slowly
Hints: c) Adversely
124. Smallest gametophyte is present in:
a) Adiantum
b) Funaria
c) Marchantia
d) Angiosperms
Hints: a) The Smallest gametophyte is the thallus (Heart shape body).
125. Incubation period of HCV is:
a) 2 weeks to 6 months
b) 4-10 weeks
c) 4-20 weeks
d) 4-26 weeks
Hints: a) The incubation period (the time between initial contact with the virus and the onset of the disease) for hepatitis C ranges from 2 weeks to 6 months, most commonly 6 to 9 weeks.
126. Osteopenia starts at the age of:
a) 30-40
b) 30-35
c) 40-45
d) 50-60
Hints: b) osteopenia refers to bone density that is lower than normal peak density but not low enough to be classified as osteoporosis. All people begin losing bone mass after they reach peak bone density at about 30 years of age. The thicker your bones are at about age 30, the longer it takes to develop osteopenia and osteoporosis.
127. The order of reducing power of halide ion is:
a) $I^- > Br^- > Cl^- > F^-$
b) $F^- > Cl^- > Br^- > I^-$
c) $I^- > Cl^- > F^- > Br^-$
d) $Br^- > Cl^- > I^- > F^-$
Hints: a) $I^- > Br^- > Cl^- > F^-$
128. Stable electronic configuration of Cu(29) is:
a) $[Ar] 4s^2 3d^4$
b) $[Ar] 4s^0 3d^{10}$
c) $[Ar] 4s^1 3d^{10}$
d) $[Ar] 4s^2 3d^7 4p^2$
Hints: c) an electron 4s transfer



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191. The efficiency of a transformer which draws a power of 20 watt is 60 %, the power supplied by it is:
a) 5 W
b) 1.2 W
c) 6W
d) 12W
Hints: d) $E = \frac{P_{output}}{P_{input}} \times \frac{100}{100}$
192. A long solenoid has length l and total number of N turns, each of which has a cross sectional area A , its inductance:
a) $\mu_0 N^2 A l$
b) $\mu_0 N^2 A / l$
c) $\mu_0 N^2 l / A$
d) $\mu_0 N l / A$
Hints: b) $L = \frac{N\phi}{I} \times \rightarrow \frac{NBA}{I} \rightarrow \frac{N\mu l A}{l} \rightarrow \frac{N^2 \mu_0 A}{l}$
193. I insist the withdrawal of your statement.
a) for
b) on
c) at
d) in
Hints: b) on
194. A protest that forms sea-weeds:
a) Red algae
b) Brown algae
c) Green algae
d) Diatoms
Hints: c) sea weed is technically a protists which is multicellular and can be green, brown or red algae but the most pravelant form is green algae.
195. Basidiocarp is fomed in the:
a) Secondary mycelium
b) Primary mycelium
c) Tertiary mycelium
d) Quaternary mycelium
Hints: a) The secondry mycelium alongwith pprimary mycelium forms fruting body called as Basidiocarp.
196. Best known "Apicomplex" is the
a) Obligate parasites
b) Facultative parasites
c) Malarial parasites
d) Pathogenic parasites
Hints: c) Sporozoa or Apicomplexes are spore like bodies. They belong to protozoans and majority of them are parasites.
197. First law of thermodynamics is expressed as:
a) $q = \Delta E + W$
b) $\Delta E = q - W$
c) $q = \Delta E - p\Delta V$
d) All of the above
e) Hints: d) $\Delta Q = \Delta E + \Delta W$, rearranged first law of thermodynamics
198. The rate law equation for reaction is given as $\frac{dx}{dt} = K[FeCl_2]^1 [K]^2$ the reaction is:
a) First order
b) Second order
c) Third order
d) Pseudo first order
Hints: c) Just odd the power of reactants in yate equation in $1+2=3$
199. Choose the correct order of reactivity of alkyl halides?



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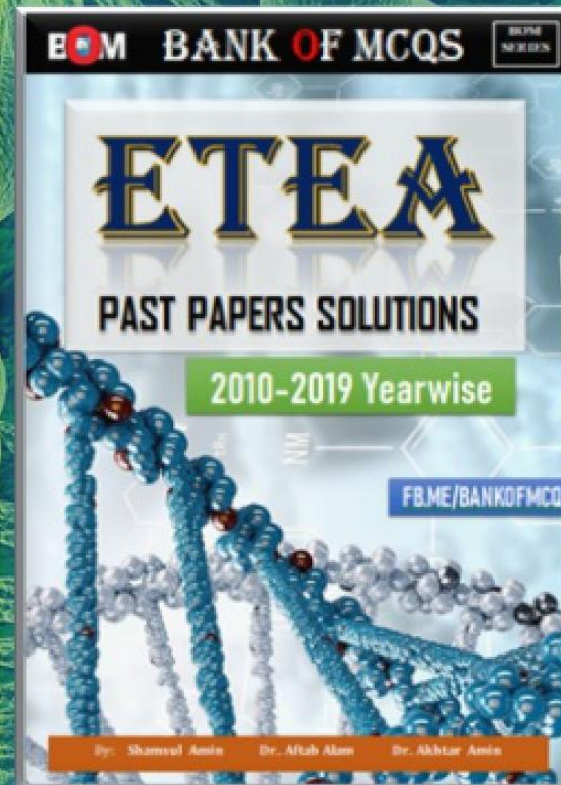
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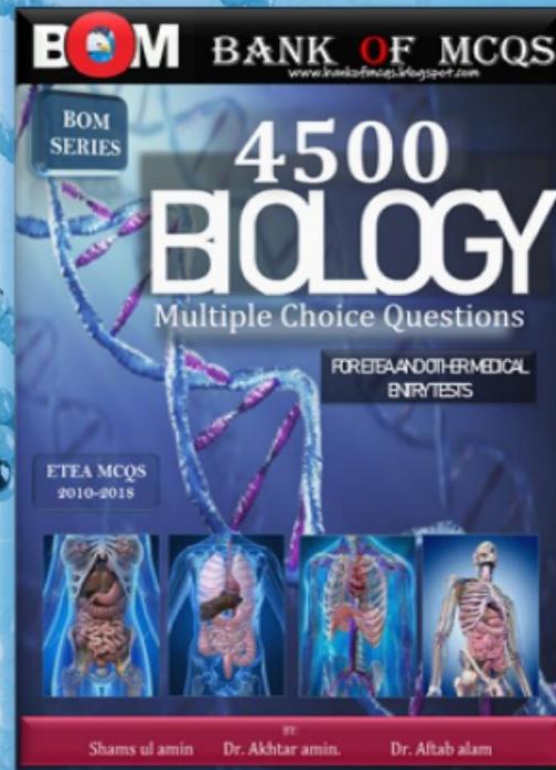
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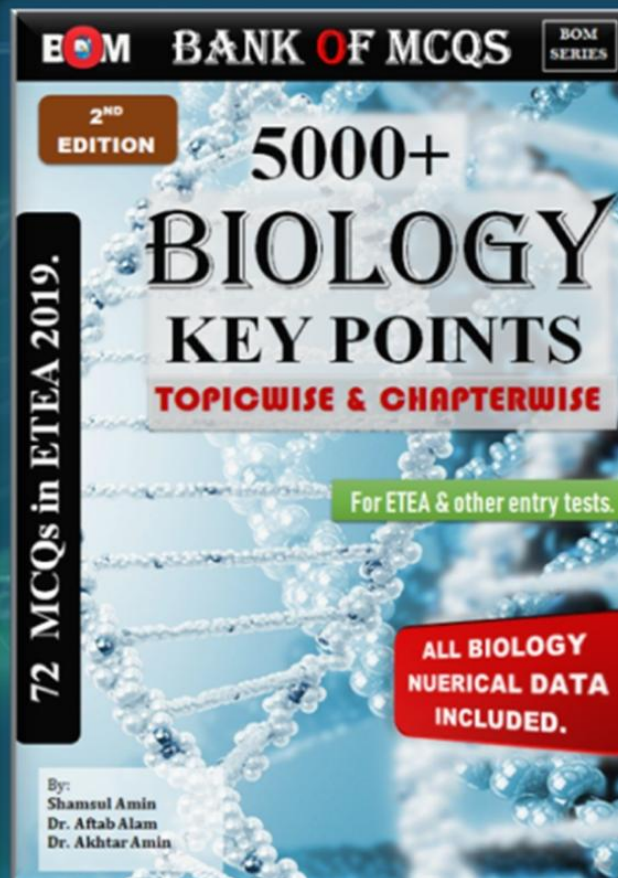
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NADH₂

Hints: Photo phosphorylation

Photo-mean light

Phosphorylation is the process of

ATP synthesis so

photophosphorylation is the process

of ATP synthesis with the help of

light.

17. Light absorbing pigments in photosystem first is:
(A) P 600 (B) P 680 (C) P 700
(D) P 760

Hints: Photosystem I absorb light 700 nm while photosystem II absorb light of 680 nm, therefore the correct option is 700.

18. When acetylene is passed through hot iron tube at 400 °C, it gives:
(A) Benzene (B) Toluene
(C) O-Xylene (D) Metaxylene
Hints: (a) When acetylene is passed through hot iron tube at 400 °C, it undergoes cyclic polymerization to form benzene.

19. Which of the following compounds will react with methyl magnesium iodide followed by acid hydrolysis to give ethyl alcohol?
(A) Ethylene (B) Acetone
(C) Acetaldehyde (D) Formaldehyde

Hints: (d) Formaldehyde reacts with methyl magnesium iodide to form an addition product which upon hydrolysis gives ethyl alcohol.



Mg⁺I

HCL/H₂O



20. Diethyl ether and Methyl propyl ether are:
(A) Conformational isomers
(B) Meta mers
(C) Geometrical isomers
(D) Enantiomers

Hints: (d) Metamers are structural isomers which have the same functional groups but different groups are attached with the same multivalent atom (functional group).

21. A wire of resistance 4Ω is bent into a circle. The resistance between the ends of a diameter of the circle is:
(A) 4Ω (B) 1 Ω (C) 1/4 Ω (D) 1/16 Ω

Hints: (c) when a wire of resistance 4 Ω is bent into a circle the resistance b/w the ends of a diameter of the circle is load the parallel combination so for parallel combination the resistance decreases.

22. The state of thermal equilibrium between two systems is determined by equality of:

(A) Pressure (B) Volume
(C) Temperature (D) Mass

Hints:

23. In the direction indicated by an electric field line:
(A) The potential must increase
(B) The potential must decrease
(C) The electric field strength must increase
(D) The electric field strength must decrease

Hints: (b) in the direction indicated



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by an electric field line the potential must decrease.

24. The enlarged lining epithelium cells connected with groups of developing spermatozoa in testes is:
(A) Somatic cells (B) Serkoli cells
(C) Stem cells (D) Totipotent cells

Hints: Sterlioli cells are present in seminiferous tubes which helps in the development of spermatozoon. Totipotent cell are a type of stem cell which have the ability to form a complete organism including the extra embryonic membrans and as option c and d are similar so they are wrong chromosomes as somatic cell and stem both have (2n) number of chromosome therefore option a is also incorrect.

25. The hormone released by the posterior pituitary. That stimulates the contraction of uterine and mammary gland muscles is called:
(A) Prolactin (B) IH (C) FSH
(D) Oxytocin

Hints: Protactin, leutinizing hormone and follical stimulating hormone all these are released by anterior pituitary. Oxytoein: Oxytoein is the only hormone released by poster pituitary.

26. 'Get into a soup' implies:
(A) Face a predicament
(b) play a game of cards
(C) Swallow a fly in soup
(d) go for hot spicy soup

27. A study of communities in relation to environment is called:
(A) Social ecology (B)

Synecology
(C) Autoecology (D)
Heteroecology

28. In Eukaryotes, DNA replication proceeds at the rate of:
(A) 50 base pairs per seconds
(B) 40 base pairs per seconds
(C) 20 base pairs per seconds
(D) 30 base pairs per seconds

Hints: In eukaryotes ornanisms the DNA polymerase enzymes can add 50 nitrogenous bases to the newly forming DNA molecule per second.

29. Fatty acids are:
(A) Linsaturated dicorboxylic acid
(B) Long chain alkanolic acid
(C) Aromatic carboxylic acid
(D) Aromatic dicarboxylic acid
Hints: (b) Fatty acids are long chain aliphatic carboxylic acids which are derived from fats or oils. These occur as esters of glycerol. For example stearic acid (C₁₇H₃₅COOH)

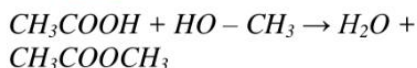
30. Saponification of a fat:
A) Always results in the formation of soaps.
B) Results in the formation of esters.
C) Results in the formation of waxes.
D) Results in the formation glycerol and soap.

Hints: (a) Saponification is the hydrolysis of triglycerides by alkalies to form glycerol and sodium / potassium salts of fatty acids called soaps.

31. Carbylamine test is given by:
(A) Primary amines (B) Secondary amines



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39. The characteristic reaction of carboxylic acid is:
(A) Electrophillic substitutions
(B) Nucleophillic substitution
(C) Electrophillic addition
(D) Nucleophillic addition
Hints: (b) Characteristic reactions of carboxylic acids are nucleophilic substitution reactions during which OH group is replaced by halogen, alkoxy, amino etc groups to form acid halides, esters, acid amides etc.
40. Which of the following compounds does not give iodoform test on reaction with I_2 and NaOH ?
(A) Propanone (B) Ehtanol
(C) Butanone (D) 2-Propanol
Hints: a) All those primary and secondary alcohols give idoform test positive which produces methyl aldehydes and methyl ketones on oxidation.
41. The gravitational field strength on the surface of the Earth is g . The gravitational field strength on the surface of a planet of twice the radius and the same density is:
(A) $4g$ (B) $2g$ (C) g (D) $g/4$
Hints: (d) we know that
$$g = \frac{GMe}{r^2}$$
 but G , Me is constant so
$$g = \frac{\text{constant}}{r^2} = g a \frac{1}{r^2}$$

But given that of twice the radius
$$g = \frac{GMe}{(2r)^2} = \frac{GMe}{4r^2} = \frac{GMe}{4(r^2)} = \frac{g}{4}$$
42. Which experimental technique reduces the systematic error of the quantity being investigated?
(A) adusting an ammeter to remove its zero error before measufing a current
(B) Measuring several internodal distance on a standing wave to find the mean Internodal distance.
(c) Measuring the diameter 6f a wire repeatedly and calculating the average.
(d) Timing a large number of oscillations to find a period.
43. A basketball is thrown upward along a parabollic path. What is the ball's acceleration at its highest point?
(A) 0 (B) $1/2g$, horizontally
(C) g , upward (D) g , downward
Hints: (d) the acceleration of the ball at the highest point is g which always down word.
44. Conversion of alternating current to direct current is called:
(A) amplification (B) rectification
(C) modulation (D) both B & C
Hints: (b)
45. Operational amplifiers can amplify:
(A) ac only
(B) dc only
(C) both ac and dc
(D) None of them
Hints: (d)
46. A medical lab has a 16g of sample of radioactive isotopes. After 6 hours it was found that 12g of a sample have decayed. The half life of the isotope is:
(A) 12 hours (B) 6 hours
(C) 2 hours (D) 3 hours
47. You will be the perfect in charge _____ this group.
(A) of (B) to (C) by (D) on



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- (A) 12ms⁻¹
- (B) 13.3ms⁻¹
- (C) 48ms⁻¹
- (D) 40ms⁻¹

Hints: $V_{av} = \frac{\text{total distance}}{\text{total time}} = 12m$
/sec

85. In octopus, the foot is modified into:
(A) Disc (B) Arm (C) Foot (D) Siphon

86. Which of the following is include in deuterostome?
(A) Brittle star (B) Scorpion
(C) Chaelopterus (D) Unio

Hints: Brittle star belong to echinoderms therefore it is Deuterostomas. Deuterostpmas means the first opening develops into anus.

87. Choose the correct sentence:
(a) The lecture was long a bore and uninspired.
(b) The lecture was long a bore and uninspiring.
(c) The lecture was long boring and uninspiring
(d) The lecture awas a long a bore and an uninspiring

88. Murein cell-wall is composed of:
(A) Sugar and amino acids
(B) Calcium pectate.
(C) Glycoprotein
(D) Peptidoglycan
Hints: All bacteria wall are made up from peptidoglycan which is also called mairien.

89. The genome of the most animals and higher plants is:
(A) DNA
(B) RNA

- (C) Both DNA and RNA
- (D) Either DNA or RNA

Hints: Genome mean the total number of genes in complete set of chromosome as most animal and hicher plants have DNA as heredity material therefore their Genome consists of DNA.

90. Which statement is wrong about the fourth state of matter known as plasma?

- (a) The plasma contain equal amount of positive and negative charges and are almost neutral as a whole
 - (b) Plasma exists in the atmosphere of stars
 - (c) Plasma exists in the region around the sun
 - (d) There is less amount of matter in plasma state than the familiar, solid, liquid and gaseous states.
- Hints: (d) About 99% of the universe is made up of plasma.

91. Hydrogen bonding do not exist in the molecule of:

- (A) Hydrogen (B) Proteins
- (C) Carbohydrates (D) Ammonia

Hints: (a) Hydrogen bonding can occur b/w partial positively charged hydrogen atom and lone-pair of partial negatively charged F, O or N atom only when hydrogen is already. Covalently bonded to another F, O or N atom.
For example among water, ammonia and hydrogen fluoride molecules etc.

92. Deficiency of which of the following causes diuresis?

- (A) LH (B) ACTH (C) FSH



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(D) ADH

Hints: Diuresis means increase amount of urine as ADH (antidiuretic hormone) control the water levels of urine, there fore when deficiency of ADH causes increase amount of urine or diuresis.

93. 'ACQUAINTANCE' means a person whome:
A) One loves but whome one cannot marry.
B) One knows but who is not a close friend.
C) One can depend on for help in hour of need.
D) One can hire for attempting a question paper.
94. In angiosperms the megaspore develops into:
(A) Embryo-Sac (B) Embryo
(C) Seed (D) Male gametophyte
Hints: Megaspore inside the ovule developes into 7 cell structure call embryo sac or female gametophyte.
95. All of the following plants posses hermaphrodite flowers except:
(A) Lathyrusodoratus (B) Solanum-nigrum
(C) Zea-mays (D) Avena-sativa
Hints: Haermophrodite are the flowers having both male and female structure in the same flower, ziamays is a plant having separate male and female structures.
96. Choose the correct relation about the percent yield. It is equal to:
(A) $\frac{\text{actual yield}}{\text{theoretical yield}} \times 100$

(B) $\frac{\text{theoretical yield}}{\text{actual yield}} \times 100$

(C) $\frac{\text{theoretical yield}}{\text{actual yield}} \times 10^6$

(D) $\frac{\text{actual yield}}{\text{theoretical yield}} \times 10^3$

Hints: (a)

% yield = (Actual yield/ Theoretical yield) x 100

97. Vapour pressure of a liquid can be measured by the Barometric method and Manometric:
(a) Barometric method is more accurate than Manometric method.
(b) Manometric method is more accurate than Barometric method.
(c) Both are equally accurate and applicable.
(d) Both methods are in use but are not reliable.
Hints: (b) Manometric method is more accurate and applicabl as the chances of errors can be minimized and controlled.
98. Which is incorrect about ionization energy?
(a) Ionization energy Depends upon the magnitude of nuclear charge.
(b) Ionization energy depends upon the atomic radius
(c) Ionization energy depends upon the shielding effect.
(d) Ionization energy does not depend upon the Penetration effect of the inner orbital.
Hints: (d) Ionization energy depends upon the penetration effect of the inner orbitals. It increases with increase in the penetrating effect of an orbital. The order of penetrating power and ionization energy of different orbitals is; s > p



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(c) Increases uniformly with respect to time.
(d) Is proportional to the displacement of the mass from a fixed point.

Hints: (c)

147. The prefix 'pico' stands for:

- (a) 10^6
- (b) $10=$
- (c) 10^{-12}
- (d) 1012

Hints: (c) 10^{-12}

148. The first artificial radioactive substance was made by bombarding aluminum $^{15}\text{Al}^{27}$, with α -particle. This produced an unstable isotope of phosphorus, $^{15}\text{P}^{30}$, What was the by product of this reaction?

- (A) An α -particles
- (B) A β -particles
- (C) A γ -ray
- (D) A neutron

149. Which species has no net charge?

- (A) An α -particles
- (B) An electron
- (C) A proton
- (D) A neutrino

Hints: (d) A neutrino has no net charge because they are not effected by the electro-magnetic forces.

150. If the coding sequence on the dna is AATIGCT, the sequence in the mRNA will be:

- (A) AAUOCGT
- (B) UUAACGA
- (C) TTAACGA
- (D) UUTTCGT

Hints: Both DNA and RNA are made up from nitrogenous bases but the RNA have uracil instead of Thymine. Therefore AATTGCT on DNA is will be UUAACGA on RNA.

151. Gene and chromosomes show

parallel behavior except:

- (A) Number
- (B) Inheritance
- (C) Heredity
- (D) Composition

Hints: Both gene and chromosome shows similar behavior in inheritance, heredity and composition only difference is in their number as chromosome are few in number while gene a large in number. So the correct option is (a) number.

152. 'Mortal stay' implies:

- A) Life that a man will have after death.
- B) Life spent in the company of friend.
- C) Life passed in hostel without studying.
- D) Life in this world which is short lived.

153. Chlorophyll is protected from intense light by:

- (A) Phytochrome
- (B) Phytokinin
- (C) Phycocyanin
- (D) Carotenoids

Hints: Carotenoid is the accessory pigment which helps in photosynthesis and protect the chlorophyll from damage by intense light.

154. Replication of DNA occurs during:

- (A) Interphase
- (B) Prophase
- (C) Metaphase
- (D) Anaphase

Hints: Replication of DNA is process during which DNA duplicate itself this duplication or replication occurs during s-phase of interphase. So correct option is Interphase.

155. Which of the following compound is assigned the octane number of 100?



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- (A) n-heptane
(B) n-octane
(C) 2,3,3-trimethyl pentane
(D) 2,2,4-trimethyl pentane
Hints: (d) An octane number of 100 is assigned to 2,2,4-trimethyl pentane (iso-octane-Trade name) on rating scale. A fuel comprising of iso-octane molecules is the best fuel.

156. The major product of acid catalysed dehydration of 3-pentanol is:

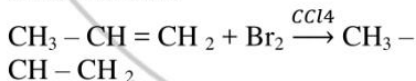
- (A) 1-pentane
(B) 2-Pentene
(C) 2-Methyle butane
(D) 3-Methyle butane
Hints: (b) $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$



157. Which of the following compound will react most readily with bromine in CCl_4 ?

- (A) 1-pentane
(B) 2-pentane
(C) 2-Methyle-1- butane
(D) 3-Methyle-1- butane

Hint: (c) Br_2 readily adds across the $\text{C}=\text{C}$ bond of alkene to give dibromoalkane



158. The half life of ^{22}Na is 2.6 years. If X grams of this sodium isotope are initially present how much is left after 13 years.

- (A) $X/32$ (B) $X/13$ (C) $X/8$
(D) $X/5$

159. Monochromatic light passes through two parallel slits in a

screen and falls on a place of film.

The pattern produced is an example of:

- (A) refraction and diffraction
(B) Interference and reflection.
(C) Interference diffraction
(D) Diffraction and polarization.

160. The senator is opposed _____ this new legislation.

- (A) at (B) to (C) try (D) on

161. Sodium chloride crystal structure is:

- (A) Hexagonal (B) Body centered cubic
(C) Face centered cubic (D) Tetragonal

Hints: (c) Sodium chloride has face centered crystal structure in which coordination number of each ion is six i.e each Cl^{-1} ions.

162. An acid is a substance which accepts:

- (A) An electron pair
(B) Proton
(C) An electron
(D) Pair of proton

Hints: (a) Lewis acid is an electron-deficient species which accepts or tends to accept an electrons- pair.

163. Carbon-14 is used in carbon dating.

Which of the following species has both same number of neutrons and same number of electrons as in atom of c-14?

- (A) $^{14}_7\text{N}^{+1}$
(B) $^{16}_8\text{O}^{2+}$
(C) $^{17}_9\text{P}^{+1}$
(D) $^{20}_{10}\text{Si}$

Hints: (b) $^{16}_8\text{O}^{+2}$ contain 8 protons and 8 neutrons as present in C^{14} atom.

164. A student connect a 6 volt



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battery and a 12 volt battery in series and then connects this combination across a 10Ω resistor. What is the current is the resistor?

- (A) 0.8 A (B) 1.8 A (C) 0.9 A
(D) 2.6 A

Hints: (b) We know that

$$V = IR, \frac{V}{R} = I, I = \frac{V_1 + V_2}{R} = \frac{18}{10} = 1.8A$$

165. A step-up transformer is one that:

- (A) Increase the power
(B) Increase the current
(C) Increase the voltage
(D) Increase the energy

166. The waves which do not require any medium for their propagation are called:

- (a) Mechanical waves
(b) Sound waves
(c) Tidal waves
(d) electromagnetic waves

Hints: (d) Electromagnetic waves do not require medium for their propagation.

167. Add some milk and sugar _____ the afternoon tea.

- (A) with (B) in (C) on (D) to

168. In vacuum all electromagnetic waves have the same:

- (A) Speed (B) Energy
(C) Frequency (D) wavelength

169. Human arm is homologous with:

- (A) Sea flipper (B) Octopus
Tntade
(C) Bird wing (D) Both A and C

Hints: Homologous structure are those structures which have similar structures but different in function-human arm, birds wing a eal flipper have similar structure. Therefore

the correction option is (d) both (a) and (c)

170. A specific nudeotide sequence on DNA molecule to which RNA polymerase attaches to initiate transcription of mRNA from a gene is called:

- (A) Poly genes (B) Genome
(C) Promoter (D) Pletoropy

Hints: Promotor is a short segment of DNA which control the transcription of mRNA from DNA. Promoter is the part of which RNA polymerase attaches.

171. 'Break the ice' implies:

- (A) Walk on ice-sheet
(B) Swallow ice-cube
(C) Chisel an ice-block
(D) to make beginning

172. All of the following belong to phylum Protista except:

- (A) Protomycota (B)
Gymnomycota
(C) Oomycota (D) Deutromycota

Hints: Deutromycota is class / sivation of imperfect fungi not like protists.

173. A special protein carriers in plasma membrane is:

- (A) Catalase (B) Lipase
(C) Permease (D) Arginase

Hints: Permease are the protein carrier which helps during the movement of material into the cell.

174. Reduction of acetaldehyde with H_2/Ni gives:

- (A) Ethanol (B) Ethanoic acid
(C) Ethane (D) Ethylene

Hints: (a)



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ENGINEERING PAPER 2014

- | S.N | MCQs |
|-----|--|
| 1. | <p>The spectral line obtained when an electron jumps from $n = 6$ to $n = 3$ belongs to the:</p> <p>A) Balmer Series B) Lyman Series
C) Paschen Series D) Plund Series</p> <p>Hints: (c) for paschen series $n_p=3$ and $n=6$</p> $\frac{1}{\lambda} = R \left(\frac{1}{3} - \frac{1}{6} \right)$ <p>infrared region</p> |
| 2. | <p>Which of the following ions water is colorless?</p> <p>a) Fe^{3+}
b) Zn^{2+}
c) Cu^{2+}
d) Co^{2+}</p> <p>Hints: Zn^{+2} ion is colorless in water.</p> |
| 3. | <p>The rate of evaporation of gasoline is greater than that of ethanol at the same temperature because:</p> <p>a) The gasoline molecules does not have hydrogen bonds.
b) The gasoline molecules are comparatively of small size.
c) The gasoline molecules are of linear shape.
d) The gasoline molecules are optically active.</p> <p>Hints: Rate of evaporation increases with decrease in intermolecular forces. Gasoline has higher vapor pressure than ethanol at same temperature due to absence of H-bonding among gasoline molecule</p> |
| 4. | <p>If A and B are two sets, Then $A \cap B$</p> <p>a) $(A \cap B)$
b) $A \cap B$
c) $(A \cup B)$
d) $(B \cap A)$</p> <p>Hints: $A \cap B = (A \cup B)$ De Morgan's Law</p> |
| 5. | <p>$(\cos \theta - 1)(\csc \theta + 1) =$</p> <p>a) $\tan^2 \theta$
b) $\cot^2 \theta$
c) $\sec^2 \theta$
d) $\sin^2 \theta$</p> <p>Hints: $(\cos \theta - 1)(\csc \theta + 1) = \cos^2 \theta - 1 = \cot^2 \theta$</p> |
| 6. | <p>Modulus of complex number $4 - 3i$ is:</p> <p>a) -5 b) 7 c) 1 d) 5</p> <p>Hints: Modulus of complex number $4 - 3i$ is $\sqrt{(4)^2 + (-3)^2} = 5$</p> |
| 7. | <p>Which of the following quantities is a vector?</p> <p>a) Density
b) Mass
c) Strain
d) Weight</p> <p>Hints: (d) weight . weight always directed towards earth.</p> |
| 8. | <p>An athlete throws a javelin just as it hits the ground the javelin has a horizontal velocity component of 20 ms⁻¹ and a vertical velocity component of 10ms⁻¹. The magnitude of the javelin's velocity as</p> |



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about standing waves is true?

- (a) Particles immediately either side of a node are moving in opposite directions
- (b) Particles between adjacent nodes all have the same amplitude.
- (c) Particles undergo no disturbance at an antinode.
- (d) Particles between adjacent nodes are out of phase with each other.

Hints: (a) Particles wave up and down at antinodes.

18. Electromagnetic waves are produced by oscillating charges. Sound waves are produced by oscillating tuning forks. How are these waves similar?
- (a) They are both longitudinal waves.
 - (b) They are both transverse waves.
 - (c) They both have the same frequency as their respective sources.
 - (d) They both require a medium to travel through.

Hints: (c) EMW and sound waves have same frequency of their respective sources.

19. Which of the following is the same unit as the farad?

- (a) $\Omega^{-1}\text{s}$
- (b) Ωs
- (c) Ωs^{-1}
- (d) $\Omega^{-1}\text{s}^{-1}$

Hints: (a) $\Omega^{-1}\text{s}$, we know that $RC = t$, $c = \frac{t}{R}$, $\frac{S}{\Omega} = \Omega^{-1}\text{s}$

20. 'Commencement' means:
- (a) the beginning
 - (b) the conclusion
 - (c) The impending
 - (d) The interloping

21. The addition of a catalyst to

a chemical reaction changes:

- (a) the enthalpy
- (b) the entropy
- (c) The activation energy
- (d) The free energy

Hints: A catalyst increases the rate of a chemical reaction by lowering the activation energy.

22. TiCl_3 is used as catalyst mainly for the:

- (a) Manufacture of ammonia
- (b) Manufacture of methanol
- (c) Oxidation of ethanol to acetaldehyde
- (d) Polymerization of ethene to polythene

Hints: TiCl_4 is used as catalyst mainly for polymerization of ethane to polythene.

23. When temperature of 30.0 cm³ of nitrogen gas is change from 27 oC to 57 oC at constant pressure of 760 mm. the volume of gas becomes closest to which one of the following?

- (a) 11.5 cm³
- (b) 21.5 cm³
- (c) 33.0 cm³
- (d) 60.0 cm³

Hints: $V_1 = 30\text{cm}^3$, $T_1 = 27 + 273 = 300\text{K}$

$V_2 = ?$ $T_2 = 57 + 273 = 330\text{K}$

From Charles law

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}, V_2 = \frac{V_1}{T_1} \times T_2,$$

$$V_2 = \frac{30 \times 330}{300}, = 33 \text{ cm}^3$$

24. Which of the following is false?

- (a) The cancellation laws hold in a group
- (b) Each element in a group has a unique inverse.
- (c) A group can be an empty group



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(d) None of the above

25. If α and β are the roots of the equation $5x^2 + 5x + 4 = 0$ then $\alpha\beta =$

- (a) $\frac{4}{3}$
- (b) $\frac{5}{3}$
- (c) $\frac{2}{3}$
- (d) $\frac{1}{3}$

Hints: If α and β are the roots of the equation

$$3x^2 + 5x + 4 = 0 \text{ then } \alpha\beta = \frac{4}{3}$$

26. If $f(x) = \frac{2x}{3x+1}$ then $[f(2)]^{-1} =$

- (a) $\frac{4}{7}$
- (b) $\frac{7}{4}$
- (c) $\frac{-7}{4}$
- (d) $\frac{-4}{7}$

Hints: If $f(x) = \frac{2x}{3x+1}$ then $[f(2)]^{-1} = \frac{7}{4}$

$$\text{Since } f(2) = \frac{2(2)}{3(2)+1} = \frac{4}{7}$$

$$\text{And } [f(2)]^{-1} = \frac{7}{4}$$

27. A valid set of units for specific heat capacity is:

- (a) KgJ^{-1}k
- (b) $\text{KgJ}^{-1}\text{k}^{-1}$
- (c) KgJk^{-1}
- (d) $\text{Kg}^{-1}\text{k}^{-1}$

Hints: (d) $C = \frac{\Delta Q}{m\Delta T} = \text{J}/\text{Kg k} = \text{kg}^{-1} \text{J K}^{-1}$

28. The gravitational field strength on the surface of the Earth is g . The gravitational field strength on the surface of a planet of twice the radius and the same density is:

- (a) $4g$
- (b) $2g$
- (c) g
- (d) $g/4$

Hints: (d)

$$G = \frac{GM_e}{r^2}, g = \frac{1}{r^2}$$
$$g' = \frac{GM_e}{(2r)^2} = \frac{GM_e}{4r^2} = g/4$$

29. A metal sphere of radius r is dropped into a tank of water. As it sinks at speed. It experiences a drag force F given by $F = kr^2v$, where k is a constant. What are the SI base units of k ?

- (a) $\text{kg m}^2\text{s}^{-1}$
- (b) $\text{kg m}^{-2}\text{s}^{-2}$
- (c) $\text{kg m}^{-1}\text{s}^{-1}$
- (d) kg m s^{-2}

$$F = Kr^2v, D = \frac{F}{r^2v} = \frac{N}{\text{mms}}$$

Hints: (c)

$$= \frac{\text{kgms}}{\text{s}^2\text{m}^2} = \text{kgm}^{-1}\text{s}^{-1}$$

30. 'Endowed' means:

- (a) Checked or corrected
- (b) Betrayed or deceived
- (c) Alarmed or disturbed
- (d) Awarded or gifted

31. Electro negativity of aluminium is nearly equal to that of:

- (a) Be
- (b) B
- (c) Mg
- (d) K

Hints: The electronegativity of both aluminium and beryllium is "1.05".

32. Gypsum has the chemical formula:

- (a) CaCO_3
- (b) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- (c) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
- (d) $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$

Hints: The chemical formula of gypsum is $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

33. Select the ligand which is bidentate:

- (a) EDTA
- (b) Water



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- (c) Ammonia
(d) Ethylenediamine

Hints: Ethylenediamine

($\text{H}_2\text{N}-\text{CH}_2-\text{CH}_2-\text{NH}_2$) is a bidentate ligand due to presence of two lone-pairs of electrons on two nitrogen atoms. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

34. For what value of k will equation $x^2 + kx - 5 = 0$ have the sum of roots equal to the product of roots?

- (a) 3 (b) -5 (c) -2 (d) 5

Hints: Sum of the roots $-\frac{k}{1} = -k$

Product of roots $= \frac{-5}{1} = -5$

Both are equal $= -k = -5, k = 5$

35. $15^\circ =$

- (a) $\frac{\pi}{6}$ radians
(b) $\frac{\pi}{12}$ radians
(c) $\frac{\pi}{18}$ radians
(d) $\frac{\pi}{24}$ radians

Hints: $15^\circ = \frac{\pi}{12}$ rad ; since $180^\circ = \pi$ rad

$1 = \frac{\pi}{180}$ rad , $15^\circ = 15 \times \frac{\pi}{180}$ rad $= \frac{\pi}{12}$ rad

36. Which of the following is not a quadratic equation?

- (a) $5x^2 + 3x = 0$
(b) $3x^2 - 27 = 0$
(c) $x + 3 = 5/x$

- (d) $3 - 1/x = 5$

Hints: (d) is correct

37. To travel a constant speed a car engine provides 24 kW of useful power. The driving force on the car is 500 N. at what speed does it travel?

- (a) 40 ms^{-1}

- (b) 2.5 ms^{-1}

- (c) 4.0 ms^{-1}

- (d) 25 ms^{-1}

Hints:

38. For a given liquid at atmospheric pressure which process can occur at any temperature?

- (a) Boiling (b) Evaporation
(c) Melting (d) Solidification

Hints: Evaporation of liquid can occur at all temperatures above 0K (-273°C)

39. A wire is stretched by 8 mm. When a load of 60 N is applied. What will be the extension of a wire of the same material having four times the cross-sectional area and twice the original length when the same load is applied?

- (a) 8 mm (b) 16 mm (c) 2 mm (d) 4 mm

40. "Archive" means:

- (a) A model of building behind museum.
(b) A sequential statement of inventions.
(c) A collection of records about the past.
(d) A chronological order of discoveries.

41. Select the correct formula of potassium hexacyanoferrate.....

(a) $\text{K}_3[\text{Fe}(\text{CN})_6]$

(b) $\text{K}_4[\text{Fe}(\text{CN})_6]$

(c) $\text{K}_2[\text{Fe}(\text{CN})_6]$

(d) $\text{K}[\text{Fe}(\text{CN})_6]$

Hints: The correct formula of potassium hexacyanoferrate is $\text{K}_3[\text{Fe}(\text{CN})_6]$



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A single chloride radical can destroy upto 100, 000 ozone molecules.

123. Alkyl halides undergo:

- (a) Electrophilic substitution reactions.
 - (b) Electrophilic addition reaction.
 - (c) Nucleophile substitution reaction.
 - (d) Nucleophile addition reaction.
- Hints: Alkylhalides undergo Nucleophilic substitution reactions during which halide ion is replaced by another nucleophile.

124. If (0,0) and (0,-3) are respectively the vertex and focus of a parabola then its equation is:

- (a) $y^2 = 12x$
 - (b) $y^2 = -12x$
 - (c) $x^2 = 12y$
 - (d) $x^2 = -12y$
- Hints: $x^2 = -12y$

125. For the ellipse $16x^2 + 25y^2 = 400$ the eccentricity, $e =$

- (a) $\frac{2}{5}$ (b) $\frac{3}{5}$ (c) $\frac{4}{5}$ (d) $\frac{1}{5}$
- Hints: $16x^2 + 25y^2 = 400$ can be written as
 $\frac{x^2}{25} + \frac{y^2}{16} = 1$, $a^2 = 25$, $b^2 = 16$: $b^2 = a^2(1 - e^2)$
 $E^2 = \frac{a^2 - b^2}{a^2}$, $e = \frac{3}{5}$

126. When $e = 1$ the conic is a/an

- (a) Circle (b) Ellipse
 - (c) Hyperbola (d) Parabola
- Hints: When $e = 1$: parabola

127. The force between two charged bodies is 'F'. If the charge on each body is doubled and the distance between them is halved, the force acting on each charged body is:

- (a) 2F (b) 4F (c) 8F (d) 16F

Hints: (c) $F = \frac{k(2q_1)(2q_2)}{(\frac{r}{2})^2} = 16 \frac{kq_1q_2}{r^2} = 16F$

128. Which one of the following represents the relationship between the resistance 'R' of a wire and its diameter 'd'?

- (a) $R \propto d$
- (b) $R \propto d^2$
- (c) $R \propto 1/d^2$
- (d) $R \propto 1/d$

$$R \propto \frac{1}{A} \Rightarrow R \propto \frac{1}{\pi r^2} \Rightarrow R \propto \frac{1}{\pi d^2}$$

Hints: (c)

$$\text{Hence } R \propto \frac{1}{d^2}$$

129. By how many ... Does doubling the diameter of a wire and making it 10 times longer increase its resistance?

- (a) 2.5 times
- (b) 5 times
- (c) 10 times
- (d) 20 times

Hints: (a)

$$R = P \frac{L}{\pi d^2}, R' = \frac{10pL}{4\pi d^2} = 2.5R = 2.5 \text{ times}$$

130. The flat be alright. If the people above us ____ not so noisy

- (a) are
- (b) would be
- (c) were
- (d) will be

131. Which one of the following compounds would react most rapidly in an SN2 reaction?

- (a) $(\text{CH}_3)_3\text{Cl}$ (b) $\text{CH}_3\text{CH}_2\text{I}$
- (c) $\text{CH}_2 = \text{CH}$ (d) $(\text{CH}_3)_2\text{CH}$



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oxidation give methyl ketones or CH_3CHO , give yellow ppt of CHI_3 with I_2 and NaOH .

142. Which of the following compounds will not be easily oxidized?

- (a) Aldehyde (b) Primary alcohol
(c) Secondary alcohol (d) Tertiary alcohol

Hints: Tertiary alcohols are difficult to oxidize primary alcohols give aldehydes while secondary alcohols give ketones on oxidation.

143. Ethers are considered as:

- (a) Lewis acids (b) Lewis bases
(c) Neutral (d) Amphoteric

Hints: Ethers are considered as Lewis bases due to presence of two lone-pairs of electrons on oxygen.

144. Radius of a circle whose equation is $x^2 + y^2 - 6x + 8y + 21 = 0$ is:

- (a) 79 (b) 20 (c) $\sqrt{4}$ (d) 5

Hints: Radius of a circle whose equation is

$$x^2 + y^2 - 6x + 8y + 21 = 0 \text{ is } 2$$

$$R = \sqrt{g^2 + f^2 - c} : g = -3, f = 4, c = 21$$

145. A Vector which is used to represent the direction of a given vector is called:

- (a) Position vector (b) Unit vector
(c) Null vector (d) Zero vector

Hints: (b) Unit vector is used to represent the direction of a vector.

146. The line $y = mx + c$ be the tangent to the parabola $y^2 = 4ax$ if:

- (a) $c = \frac{a}{m}$
(b) $a = cm$

(c) $m = \frac{a}{c}$

- (d) All of these

Hints: The line $y = mx + c$ be the tangent to the parabola $y^2 = 4ax$ if

$$c = a/m$$

$$(mx + c)^2 = 4ax \text{ has equal roots gives } c = a/m$$

147. voltage law is based upon the law of conservation of:

- (a) Momentum (b) Current
(c) Charge (d) Energy

Hints: (d) conservation of energy

148. When resistors are connected in parallel the combined or equivalent resistance is always:

- (a) Greater than the greatest individual resistance.
(b) Equal to the smallest individual resistance.
(c) Smaller than the smallest individual resistance.
(d) None of the above.

Hints: (c) smaller than the smallest individual resistor.

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

149. A thermistor is a semiconductor device whose resistance:

- (a) Increase as its temperature increases.
(b) Decreases as its temperature decreases.
(c) Decreases as its temperature increases.
(d) Increases as its temperature decreases.

Hints: (c) thermistor is -ive



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(c) Vector product is distributive over

Multiplication.

(d) Vector product is associative over addition.

Hints: (a)

176. Gives the vectors $a = a_1i + a_2j + a_3k$ and $b = b_1i + b_2j + b_3k$, the vector product $a \times b$ can be written in determinant form as:

(a)
$$\begin{vmatrix} i & j & k \\ a_1 & b_1 & a_3 \\ a_2 & b_2 & b_3 \end{vmatrix}$$

(b)
$$\begin{vmatrix} i & j & k \\ a_1 & b_1 & b_1 \\ a_2 & b_2 & b_3 \end{vmatrix}$$

(c)
$$\begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ i & j & k \end{vmatrix}$$

(d)
$$\begin{vmatrix} b_1 & b_3 & b_2 \\ a_1 & b_3 & b_2 \end{vmatrix}$$

Hints: (a)

177. The part of electromagnetic spectrum in which Paschen series lies is:

(a) Visible range (b) Infrared region

(c) Ultraviolet region (d) x-rays

Hints: (b) is correct

178. Operational amplifiers can amplify:

(a) ac only (b) dc only

(c) both ac and dc (d) None of them

Hints: (c) is correct

179. The resistance between +ve and -ve inputs of an ideal op-amp is:

(a) high (b) low (c) infinite (d) moderate

Hints: (a) no current flow through inputs

180. Select the correct sentence:

(a) She possesses some small charming silver ornaments.

(b) She possesses some charming small silver ornaments.

(c) Some charming small silver ornaments she possesses.

(d) Some small silver charming ornaments she possesses.

181. Which of the following is used in the reaction of benzene with acetyl chloride to form acetophenone?

(a) V_2O_3 catalyst (b) $AlCl_3$

catalyst (c) Platinum catalyst (d) Al_2O_3

catalyst

Hints: Lewis acid ($AlCl_3$) is used as catalyst in the reaction of benzene with acetyl chloride to form acetophenone.

182. Which one of the following will undergo

Substitution. In the Roth and Para position.

(a) Phenol (b) Nitrobenzene

(c) Benzoic acid (d) Benz aldehyde

Hints: The OH group present on benzene ring in phenol is opposite directing, hence phenol will undergo substitution at opposite directions.

183. Teflon is prepared by the polymerization of:

(a) Ethylene (b) Vinyl chloride

(c) Tetrafluoroethylene (d) None of them

Hints: Teflon is prepared by the polymerization of:

tetrafluoroethylene.

$nC_2F_4 \rightarrow (C_2F_2)_n$

184. If $A(x_1, y_1, z_1)$ and $B(x_2, y_2, z_2)$ by



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any two points in space then distance
 $|AB| =$

- (a) $\sqrt{(x_1 + x_2)^2 + (y_1 + y_2)^2 + (z_1 + z_2)^2}$
(b) $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$
(c) $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$
(d) $\sqrt{(x_2 - x_1)^2 - (y_2 - y_1)^2 - (z_2 - z_1)^2}$

Hints: option (b) and (c) are because the question is not well settled in original paper.

185. If $|a| = 3$, $|b| = 4$ and $\theta = 60^\circ$ then $a \cdot b =$

- (a) $\frac{1}{2}$
(b) $\sqrt{\frac{3}{2}}$
(c) 2
(d) 6

Hints: If $|a| = 3$, $|b| = 4$ and $\theta = 60^\circ$ then $a \cdot b = |a||b| \cos 60^\circ = 3(4) \left(\frac{1}{2}\right) = 6$

186. Equation of the normal at (x_1, y_1) to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$ is:

- (a) $y_1 - y = \frac{y_1 - f}{x_2 - g}(x + x_1)$
(b) $y_1 + y = \frac{y_1 - f}{x_2 - g}(x - x_1)$
(c) $y_1 - y = \frac{y_2 - f}{x_2 - g}(x + x_1)$
(d) $y_1 - y = \frac{y_1 + f}{x_2 + g}(x + x_1)$

Hints: Equation of the normal at (x_1, y_1) to the circle is $y_1 - y = \frac{y_1 + f}{x_1 + 2g}(x + x_1)$

187. A medical lab has a 16g of sample of

radioactive isotopes. After 6 hours it was found that 12g of sample have decayed the half life of the isotope is:

- (a) 12 hours
(b) 6 hours
(c) 2 hours
(d) 3 hours

Hints: (a) 4g decay in 6h, then 8 g. half of 16g will decay in 12h

188. The first artificial radioactive substance was made by bombarding aluminium $^{27}\text{Al}^{13}$ with α -particles. This produced an unstable isotope of phosphorus, $^{30}\text{P}^{15}$. What was the by-product of this reaction?

- (a) an α -particle (b) a β -particle
(c) a γ -ray (d) a neutron

189. The period of a simple pendulum can be increased by:

- (a) Decreasing the length of the pendulum.
(b) Increasing the length of the pendulum.
(c) Increasing the mass of the bob.
(d) Decreasing the mass of the bob.

Hints: (b) $T = 2\pi \sqrt{\frac{L}{g}} \Rightarrow T \propto \sqrt{L}$

190. Select the correct sentence:

- (a) Across the rooftop the thief silently crept.
(b) The rooftop across silently crept the thief.
(c) The thief crept silently across the rooftop.
(d) Silently the thief crept across the rooftop.

191. Adipic acid reacts with hexamethylenediamine to form:

- (a) Nylon-6,6 (b) Bakelite

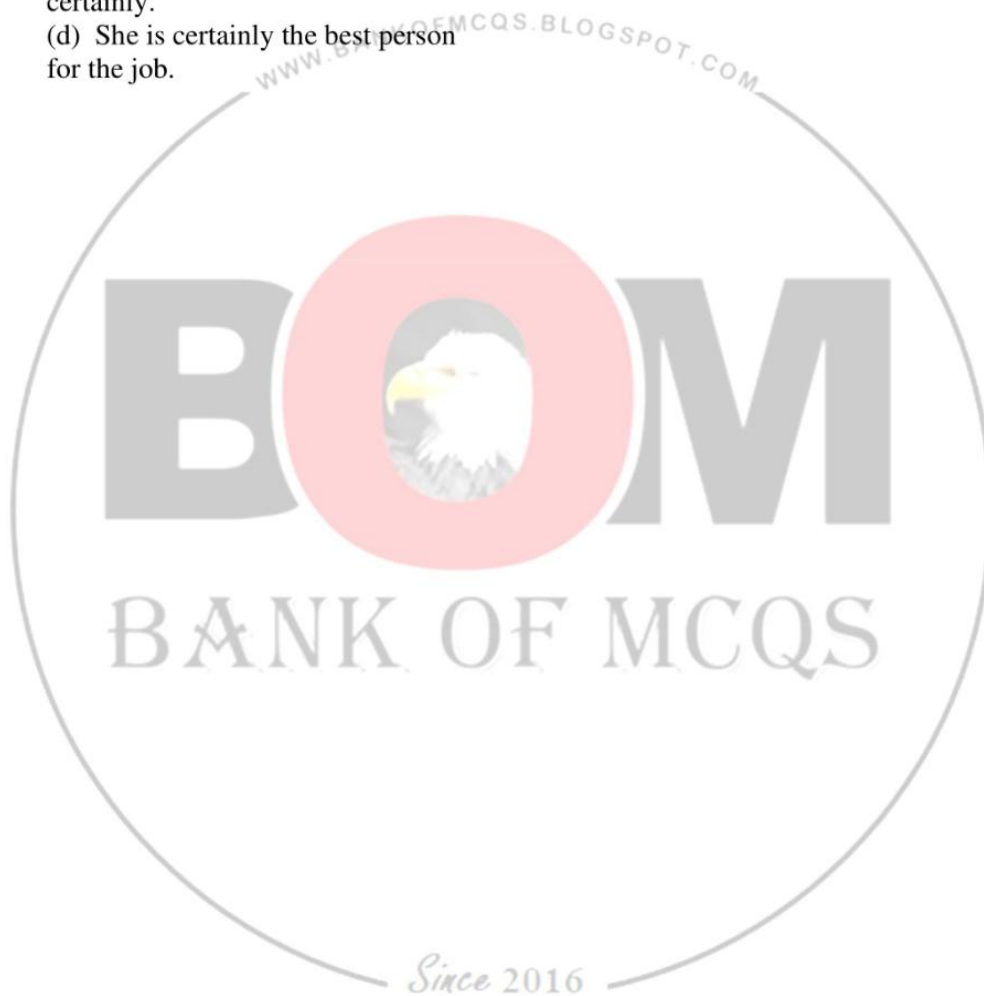
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for the job.

(b) Certainly she is the best person
for the job.

(c) She is the best person for the job
certainly.

(d) She is certainly the best person
for the job.





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S. No	MCQs	
1.	<p>Do you like this shirt?" he said to his friends. Select the correct indirect speech:</p> <p>A) He asked his friends if they liked that shirt.</p> <p>B) He asked his friends if they did liked the shirt.</p> <p>C) He asked his friends if they likened the shirt.</p> <p>D) He asked his friends if they may like the shirt.</p>	
2.	<p>Forces of 3N, 4N and 5N act at one point on an object. The angles at which the forces act can vary. What is the value of the minimum resultant force of these forces?</p> <p>A) 2N B) Between 2N and 4N C) 0 D) Between 0 and 2N</p>	
3.	<p>The sum of the squares of two numbers is 100. One number is 2 more than the other. The numbers are:</p> <p>A) 4, 6 B) 6, 8 C) 8, 10 D) 10, 12</p> <p>Hints:</p>	
4.	<p>Select the correct product formed when xenon hexafluoride reacts with water:</p> <p>$XeF_6 + H_2O$</p> <p>A) $XeO_2 + HF$ B) $XeE_4 + HF + O_2$</p>	<p>C) $Xe + HF + O_2$ D) $XeOF_4 + 2HF$</p>
5.	<p>A source of e.m.f. of 9.0 mV has an internal resistance of 6.0Ω. It is connected across a galvanometer of resistance 30Ω. What will be the current in the galvanometer?</p> <p>A) 250 μA B) 300 μA C) 1.5 mA D) 2.5 mA</p>	
6.	<p>A groupoid (S, *) is called a semi group, if _* is:</p> <p>A) Commutative in S B) Associative in S C) Distributive in S D) Transitive in S</p> <p>Hints:</p>	
7.	<p>Which of the following would you expect to be more soluble in water?</p> <p>A) CH_3COCH_3 B) CH_3COOCH_3 C) CH_3CH_2OH D) $CH_3CH_2CH_3$</p>	
8.	<p>In the absence of air resistance, a stone is thrown from P and follows a parabolic path in which the highest point reached is T. The stone reaches point Q just before landing. The vertical component of acceleration of the stone is:</p> <p>A) Zero at T B) Larger at T than at Q C) Larger at Q than at T D) The same at Q as at T</p>	



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68.

The density of a steel ball was determined by measuring its mass and diameter. The mass was measured within 1% and the diameter within 3%. The error in the calculated density of the

A) 2% B) 4%
C) 8% D) 10%

69.

In quadratic equation $ax^2 + bx + c = 0$, product of the roots is:

a) $\frac{b}{a}$ b) $\frac{-c}{a}$ c) $\frac{c}{a}$ d) $\frac{-b}{a}$

Hints: $ax^2 + bx + c = 0, a, \beta = c/a$

70.

Concentrated sulphuric acid is added to a mixture of potassium dichromate and metal chloride in solid state. On heating brown fumes of chromyl chloride are formed. Its formula is:

A) $CrOCl_2$ B) CrO_2Cl_2
C) CrO_2Cl D) $CrOCl_3$

71.

Select the correct sentence:

A) She possesses some small charming silver ornaments.
B) Some charming small silver ornaments she possesses.
C) Some small silver charming ornaments she possesses.
D) She possesses some charming small silver ornaments

72.

The minimum number of equal forces that keep the body in equilibrium are:

A) Two B) Three
C) Four D) Five

73.

If $nC_6 = nC_{12}$, then $n =$

A) 6 B) 18
C) 12 D) 4

74.

Fewer the number of carbon atoms in an alkane the lower will be the boiling point and will be:

A) Basic B) Non volatile
C) Volatile D) Acidic

75.

Two parallel plates, a distance 25 mm apart, have a potential difference between them of 12 kV. What is the force on an electron when it is in the uniform electric field between the plates?

A) 40.8×10^{-20} N B) 7.7×10^{-20} N
C) 4.8×10^{-17} N D) 7.7×10^{-14} N

76.

In the quadratic equation $ax^2 + bx + c = 0$ if $a = 0$, then it:

A) Becomes a linear equation
B) Becomes a polynomial
C) Becomes an exponential equation
D) Remains Quadratic equation

Hints: because a linear

77.

Formaldehyde is used in the manufacture of:

A) Pararosaniline B) Acetic anhydride
C) 1,3-Butadiene D) Smokeless powder

78.

A body in equilibrium must not have:

A) Kinetic energy B) Velocity
C) Momentum D) Acceleration

79.

$(\sec B - 1)(\sec 0 + 1) =$



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- A) \cot^2 B) \sec^2
C) \tan^2 D) cosec^2

Hints: $(\sec \theta - 1)(\sec \theta + 1) = \sec^2 - 1 = 1 + \tan^2 \theta = \sec^2 \theta$

80.

Which of the following is not true for enzymes?

- A) They are complex protein molecules
B) Their efficiency is independent of temperature
C) They work under specific range of pH
D) Their action is specific

81.

"You really took good care of your sister," I said. Select the correct indirect speech:

- A) I said that he had really taken good care of his sister.
B) I said that he had really cared good for his' sister.
C) I said that he really had taken good care of his sister.
D) I said that he had really good care taken of his sister.

82.

The magnitude of horizontal component of a force 10N is 6N. The magnitude of its vertical component is:

- A) 10N B) 8N
C) 4N D) 12N

83.

The numbers which have $\sqrt{-1}$ as one factor are called:

- A) Real numbers B) Complex numbers
C) Irrational numbers D) Imaginary numbers

Hints: imaginary numbers

84.

During the electrolysis of CuCl_2 solution which reaction is possible at the anode?

- A) $\text{Cu} (s) \rightarrow \text{Cu}^{2+}(\text{aq}) + 2e$
B) $2\text{H}^+ + 2e \rightarrow \text{H}_2(\text{g})$
C) $2\text{H}_2\text{O}(\text{l}) \rightarrow \text{O}_2(\text{g}) + 4\text{H}^+(\text{aq}) + 4e$
D) $\text{Cu}^{2+}(\text{aq}) + 2e \rightarrow \text{Cu}(s)$

85.

Forces of 4N and 6N act at a point. Which one of the following could not be the magnitude of their resultant?

- A) 10N B) 6N
C) 4N D) 1N

86.

If A is a square matrix of order 3x3, then AA^T is:

- A) Symmetric B) Skew-symmetric
C) Triangular D) None of the above

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

Hints: symmetric eq.

$$\begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \end{pmatrix}$$

87.

Polyamides are class of condensation polymers by a chemical reaction between:

- A) Monocarboxylic acid and diamines
B) Dicarboxylic acids and diamines
C) Dicarboxylic acids and simple amines
D) All of the above

88.

The magnitude of the resultant of two forces is F. The magnitude of

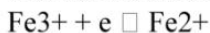


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Hints:

100.

Which statement given below is not true for the reaction?



- A) Fe^{3+} is being reduced
- B) The oxidation state of Fe has changed
- C) Fe^{3+} could be referred to as a reducing agent in this reaction
- D) Both Fe^{3+} and Fe^{2+} are called cations

101.

COME OF AGE' implies:

- A) To get married off
- B) To become very old
- C) To reach maturity
- D) To fall ill and expire

102.

If a stationary electron is subjected to a uniform magnetic field it will be:

- A) Unaffected
- B) Accelerated in the direction of field
- C) Caused to move in a circular path
- D) Caused to oscillate about a fixed point

103.

If a, b, c are the sides of a triangle and α, β, γ are the respective angles, then area of the triangle is:

- a) $\frac{1}{2} a^2 \sin \beta$
- b) $\frac{1}{2} a^2 \sin \gamma$
- c) $\frac{1}{2} a^2 \sin \alpha$
- d) $\frac{1}{2} bc \sin \alpha$

104.

Which one of the following will be

more acidic?

- A) 1-Pentene B) 1-Pentyne
- C) 3-Hexyne D) 2-Pentyne

105.

The gate which inverts the output of an OR gate is:

- A) NOR B) AND C) XOR D) NAND

106.

π radians =

- A) 60° B) 90° C) 360° D) 180°

107.

Choose the correct product of the following reaction:



- A) $\text{CH}_3\text{Cl} + \text{POCl}_3 + \text{H}_2\text{O}$
- B) $\text{CH}_3\text{CH}_2\text{Cl} + \text{POCl}_3 + \text{H}_2\text{O}$
- C) $\text{CH}_3\text{CH}_2\text{Cl} + \text{Cl} + \text{POCl}_3 + \text{HCl}$
- D) $\text{C}_2\text{H}_5\text{Cl} + \text{H}_3\text{PO}_3$

108.

When atoms in the gaseous state are excited to emit radiations, the spectrum obtained is:

- A) Band spectrum B) Line spectrum
- C) Continuous spectrum D) None of the above

109.

For what value of k will equation $x^2 - kx + 4 = 0$ have the sum of roots equal to the product of roots?

- A) 3 B) -2 C) -4 D) 4

110.

Which one of the following is not a state function?

- A) Enthalpy B) Free energy
- C) Work D) energy

111.

—I shall be in Geneva on Monday,
—he said. Select the correct indirect speech:

- A) He said that he would be in



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- Geneva on Monday.
B) He said that he shall be in Geneva on Monday.
C) He told that he would be in Geneva on Monday.
D) He hoped that he could be in Geneva on Monday.

112. Which one of the following particles belongs to Hadron group?
A) Neutrino B) Proton
C) Electron D) Antineutrino

113. The product of the fourth roots of unity is:
A) Zero B) 1 C) -1 D) $-i$

114. In lower atmosphere, ozone has adverse effects due to its role in the formation of:
A) CO₂ B) NO₂
C) Fog D) Photochemical smog

115. In an AC capacitive circuit, current and voltage phase relation is:
A) In-phase
B) Current leads voltage by 90°
C) Voltage leads voltage by 90°
D) Current leads voltage by 180°

116. $\int x^n dx =$
a) $\frac{x^{n+1}}{n+1} + C, n \neq -1$
b) $Nx^{n-1} + C, n \neq -1$
c) $\frac{nx^{n-1}}{n-1} + C, n \neq -1$
d) $\frac{nx^{n-1}}{n-1} + C, n \neq -1$

117. Identify the name of coordination compound K₄[Fe(CN)₆]:

- A) Potassium hexa cyan ferrate
B) Potassium hexa cyan ferrate (II)
C) Potassium hexa cyan ferrate (III)
D) Potassium (I) hexa cyan ferrate (IV)

118. Keeping magnetic field B and velocity of the particles same, which particle will show the most deflection when passes through the magnetic field:
A) Neutrons B) α -particles
C) β -particles D) Y-rays

119. Which of the following sets has closure property with respect to multiplication?
A) $\{-1, +1\}$ B) $\{-1\}$
C) $\{-1, 0\}$ D) $\{0, 2\}$

120. $PbSO_4(8) + 2e^- \rightleftharpoons Pb(8) + SO_4^{2-} - 0.36v$
 $PbO_2(8) + 4H^+ + SO_4^{2-} + 3e^- \rightleftharpoons PbSO_4(8) + 1.69v$
The two half cell reactions above are involved in the discharge of a lead storage battery. The potential of a single cell lead storage is:
A) 1.33 volts B) 4.10 volts
C) 2.66 volts D) 2.06 volts

121. The might promote Javed next year. Select the correct passive voice:
A) Javed might be promoted by them next year.
B) Promoted by them Javed might be next year.
C) By them Javed might be promoted next year.
D) Next year Javed might be



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may not be used for the oxidation of aldehydes and ketones to carboxylic acids?

- A) LiAlH_4 B) KMnO_4
C) $\text{K}_2\text{Cr}_2\text{O}_7$ D) $\text{Na}_2\text{Cr}_2\text{O}_2$

148.

In the diagram, a box slides down an incline plane. Toward which point is the force of friction directed?

- A) 1 B) 2
C) 3 D) 4

149.

Two lines with slope m_1 and m_2 respectively are parallel if:

- A) $m_1 + m_2 = 0$ B) $m_1 - m_2 = 0$
C) $m_1, m_2 = 1$ D) $m_1 = m_2$

150.

The coordination number of cobalt in the complex $[\text{Co}(\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2)_3]^{3+}$ is:

- A) 3 B) 4
C) 5 D) 6

151.

The senator is opposed this new legislation.

- A) To B) At
C) By D) on

152.

The half-life of ^{22}Na is 2.6 years. If X grams of this sodium isotope are initially present, how much is left after 13 years?

- A) $X/32$ B) $X/13$
C) $X/8$ D) $X/5$

153.

Length of the latus rectum of $3x^2 = 4y$ is:

- A) 4 B) -4 C) $\frac{4}{3}$ D) $\frac{3}{4}$

154.

What is the bond order in F_2

according to the molecular orbital theory?

- A) 2 B) 3
C) 1 D) 4

155.

The centripetal acceleration of a car traveling at constant speed around a frictionless circular racetrack:

- A) Is zero
B) Has constant magnitude but varying direction
C) Has constant direction but varying magnitude
D) Has varying magnitude and direction

156.

The distance of a point $(-2, 8)$ from a line $4x + 3y - 11 = 0$ is:

- A) -6 B) 1
C) 3 D) 5

157.

Nitrogen dioxide is a brown coloured gas which exists in equilibrium with:

- A) HNO_3 B) N_2O_4
C) $\text{NO} + \text{NO}_3$ D) $\text{N}_2 + \text{O}_2$

158.

A diver is swimming 10 meters below the surface of the water in a reservoir. There is no current, the air has a pressure of 1 atmosphere, and the density of the water is 1000 kilograms per cubic meter. What is the pressure experienced by the diver?

- A) 1.1 atm B) 11 atm
C) 1.99×10^5 Pa D) 1.01×10^5 Pa

159.

The set of all first elements of the ordered pairs in relation R is called:



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- A) Domain of R B) Range of R
C) Co-domain of R D) Subset of R
160. The complex compound $[\text{Ni}(\text{CN})_4]^{2-}$ is square planar in shape. What is the type of hybridization involved?
A) Sp^3 B) $\text{S}3\text{d}$
C) Dsp^3 D) Dsp^2
161. ENTOURAGE' means:
A) Group of companions B) Embark on long tons
C) Place one visits daily D) Albums of folk singer
162. Which species has no net charge?
A) An α -particle B) A neutrino
C) An electron D) A proton
163. $\frac{d}{dx} (\text{cosec } x) =$
A) $\tan x \cdot \text{cosec } x$ B) $-\cot x \cdot \sec x$
C) $-\tan x \cdot \sec x$ D) $-\cot x \cdot \text{cosec } x$
164. Which one of the following compounds is insoluble in water?
A) CuCl_2 B) NiCl_2
C) Hg_2Cl_2 D) KCl
165. What is the optimum difference in phase for maximum destructive interference between two waves of the same frequency?
A) 180° B) 90°
C) 270° D) 360°
166. $\frac{d}{dx} \cos^{-1} x =$
a) $\frac{1}{\sqrt{1+x^2}}$
b) $\frac{1}{\sqrt{1-x^2}}$
c) $\frac{1}{\sqrt{1+x^2}}$
d) $\frac{1}{\sqrt{1-x^2}}$
167. Which one of the following has the smallest ionic radius:
A) Mg^{2+} B) Be^{2+}
C) Ca^{2+} D) Si^{2+}
168. Which derived unit below is equivalent to the SI unit for magnetic field strength, the tesla, T?
A) Nm/A B) NA/m
C) N/Am D) Am/N
169. If m_1 and m_2 are the slopes of two lines l_1 and l_2 respectively, then the angle from l_1 to l_2 is given by:
a) $\tan \theta = \frac{m_1 + m_2}{1 + m_1 m_2}$
b) $\tan \theta = \frac{m_1 - m_2}{1 + m_1 m_2}$
c) $\cot \theta = \frac{1 + m_1 m_2}{m_2 + m_3}$
d) $\cot \theta = \frac{1 + m_2 m_1}{m_2 + m_3}$
170. Ethyl alcohol was added to water to form a clear solution. What do you expect to be the vapour pressure?
A) It will be equal to V.P of water
B) It will be more than V.P of water
C) It will be less than V.P of water
D) It will be equal to V.P of ethyl alcohol
171. Your essay impressed the lecturer. Select the correct passive voice:
A) The lecturer got impressed by your essay.
B) The lecturer felt impressed by your essay.
C) By your essay the lecturer was



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had a computer.

C) She wanted to know if I could use computer.

D) She was interested to know about my computer.

11. Keratinized Epithelium is found in the:

A) Hair B) Skin C) Bone D) Muscle

Hints: keratinized epithelium is presents in the skin because the detrain protein secreted by the skin which is present in hairs, nails, claws, hooves horns etc.

12. Why is the boiling point of n-Pentane about 28°C higher than that of its 2, 2-Dimethylpropane isomer?

A) The area of contact between 2, 2-Dimethylpropane is small which results in weak forces of attraction.

B) 2,2-dimehlprpane molecules repel each other

C) N-pentane molecules cannot come into closer contact with each other

D) Shapes of molecules have not effect on boiling point

13. The vectors A and B are such that $|A + B| = |A - B|$, then the angle between the two vectors is:

A) 0° B) 60° C) 90° D) 180° $A + B = |A - B|$

$A^2 + B^2 + 2.AB\cos \theta = A^2 + B^2 - 2.AB\cos \theta$

Hints: $4.AB\cos \theta = \frac{0}{4.AB}$
 $\theta = 90^\circ$

14. Mushrooms belong to:

a) Zygomycota B) Ascomycota

C) Basidiomycota D)

Deutetoinycota

Hints: vasiidiomycota is characterized by the formation of basidiocarp and basidia both these structures are present in mushrooms.

15. Which one of the following 2 will not undergo dehydrogenation?

A) CH_3OH B) $(CH_3)_2CHOH$

C) $(CH_3)_3COH$ D) CH_3CH_2OH

16. Which one is a polymer substance?

A) Glass B) Iron C) Plastic D) copper

Hints: plastic is a polymer made up of small repeating unit is called manors e.g. p v c is made up of vnylchloride manors units Iron and copper are elements while glass is amorphous solid mode of silicates

17. In chick development gives rise to:

B) Ectoderm & Endoderm

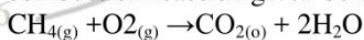
C) Ectoderm & Mesoderm

D) Mesoderm & Endoderm

E) Mesoderm only

Hints: in chick development epiblas give rise to ectoderm and mesoderm because hypoblast give rise to endoderm.

18. The heat of combustion of hydrocarbon is very useful source of heat and power, Considering the combustion reaction given below.



ΔH for the reaction is.

A) $\Delta H = 213$ kcal/mole B) $\Delta H = 213$ kcal/mole

C) $\Delta H = 426$ kcal/mole D) $\Delta H =$



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- C) Obligate saprophyte D) Obligate parasite
Hints: An organism that adopts saprophytic mode of nutrition during part of its life is called facultative saprophytes like mushrooms. Monotropa etc.
62. Which is the correct product formed when monohydric alcohol reacts with sodium metal?
A) Alkene B) Sodium alkoxide
C) Alkane D) Ether
Hints: fossil fuels include coal, petroleum and natural gas
63. If a hole is bored through the center of the earth and a pebble is dropped in it, then it will:
A) Stop at the center of the earth
B) Drop to the other side.
C) execute SHM
D) None of the above.
64. Erypsim acts upon:
A) Polypeptides B) Carbohydrates
C) Dipeptides D) Fats
65. Coal, Natural gas and petroleum are generally called:
A) Node B) Anti-node
C) Crest D) Trough
66. In vibrating cord the point where the particles are stationary is called:
A) node B) anti-node
C) crest D) trough
67. Microsporum furfur causes:
A) athlete's foot B) ring wormer
C) ergot d) dandruff
68. Benzene reacts with acetyl chloride in the presence of Lewis acid forming:
A) Chlorobenzene B) Acetophenone
C) Benzoic acid D) benzophenone
Hints: in Friedel-Crafts acylation, benzene reacts with acetyl chloride in the presence of $AlCl_3$ as catalyst
69. The minimum frequency of incident light required to emit photoelectrons from the metal surface is called:
A) critical frequency B) threshold frequency
C) work function D) none of the above
70. In a composition writing exercise, 'PRECISE' means:
A) A synopsis for writing an essay in a degree level examination
B) A critique highlighting the weak point of a feature film story
C) A resume of the commercial achievements spread over a year
D) A short summary of the crucial ideas of a longer composition
71. The gills are covered by operculum in:
A) Bony fishes B) Cartilaginous fishes
C) Lung fishes D) Jawless fishes
Hints: the gills are covered by operculum in bony fishes. The cartilaginous fishes and the other give fishes have no operculum over the gills
72. When 2-Bromo-2-methyl propane undergoes unimolecular elimination reaction, the product obtained will be:
A) 2-Methyl propane: B) 2-Methyl propane:



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hemoglobin is occupied by:

- A) Magnesium B) Sodium
C) Iron D) Potassium

95. The differences in energy between difference states of bond vibrations in a molecule correspond to which electromagnetic region?

- A) Microwave B) Infrared
C) Visible D) X-rays

Hints: the absorption of different electromagnetic radiation cause changes like microwaves cause rotational exestuation infer red radiation cause electronic exestuation and x-rays lead to the knocking out of electrons.

96. Three equivalent resistors connected in parallel have equivalent resistance $R/3$. When they are connected in series then the equivalent resistance is:

- A) $3R$ B) $R/3$ C) R D) $2R$

Hints: $R = R_1 + R_2 + R_3$

97. Thalassemia major is also known as:

- A) Sickle cell anemia B) Cooley's anemia
C) Mycocystic anemia D) Nutritional anemia

98. 40.0 dm^3 of an ideal gas at 250°C and 750 mm Hg is expanded to 50.0 dm^3 . The pressure of the gas changed to 765 mm Hg . What is the temperature of the gas?

- a) $\frac{(290)(750)(50)}{(40)(765)}$
b) $\frac{(290)(750)(50)}{(50)(765)}$
c) $\frac{(290)(750)(50)}{(765)(40)}$

d) $\frac{(750)(40)}{(290)(750)(50)}$

Hints: $p_1 = 750 \text{ mm of Hg}_1$,

$V_1 = 40 \text{ dm}^3$, $T_1 = 25^\circ\text{C} = 298\text{k}$

$P_2 = 765 \text{ mm of Hg}$, $v_2 = 50 \text{ dm}^3$, T_2

$=?$

$\frac{p_1 v_1}{T_1} = \frac{p_2 v_2}{T_2}$

$T_2 = \frac{p_2 v_2 T_1}{p_1 v_1} = \frac{765 \times 50 \times 298}{750 \times 40}$

99. Ohm's law is valid only for:

- A) Thermistor B) Bulb filament
C) Metals D) Semiconductors

100. APPRAISE' means:

- A) Tell a story at bed time
B) Evaluate the quality of
C) Do shopping in a bazaar
D) Praise a man out of place

101. Premature death of paints is caused by the deficiency of:

- A) Magnesium B) Iron
C) Phosphorus D) potassium

102. Which of the given formulae would be used to calculate the wave length of an electron? Given its velocity (v), its mass (m) and constant h :

- a) $\lambda = h m v$
b) $\lambda = h/mv$
c) $\lambda = h v/m$
d) $\lambda = mv^2/h$

Hints: according to brogle hypothesis

$mv = h/\lambda$

$\lambda = h/mv$

103. The energy stored in a charged capacitor is given by:

- a) $1/2 QV$



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Hints: in lead storage (automobile) battery Pb and PbO are consumed during usage. During recharging the reaction is reversed. PbO and SO₄²⁻ and water are converted to Pb and PbO.

149.

A vertical steel wire X of circular cross-section is used to suspend a load. A second wire Y, made of the same material but having twice the length and twice the diameter is used to suspend an equal load. What is the value of the ratio

$\frac{\text{extension of wire } x}{\text{extension of wire } y}$

A) 1/1 B) 1 C) 2 D) 4

150. My children don't approve..... my smoking.

A) I B) Of C) On D) at

151. cell death due to tissue damage is called:

A) Cancer B) Apoptosis
C) Necrosis D) Metastasis

Hints: Cell death due to tissue damage is called necrosis. In this process the cells swell and burst and release intracellular contents in the surrounding and these contents can harm adjoining cells and result in inflammation.

152. You are required to test the presence of NH₄⁺ Ion in water. Which of the following reagent will solve your problem?

A) Dimethylglyoxime B) Tollens reagent
C) Nessler's reagent D) Magneson reagent

Hints: ammonia and its salts react

with Nessler's reagent to reddish brown precipitates

153. Drops X and Y, of the same oil, remained stationary in air in the same electric field. After the field was switched off, X fell more quickly than Y. which deduction can be made?

A) X had a greater charge than Y
B) Y had a greater charge than X
C) Both X and Y. were positively charged
D) the changes on X and Y were identical in sign and magnitude.

154. The two chains of DNA occur side by side in a:

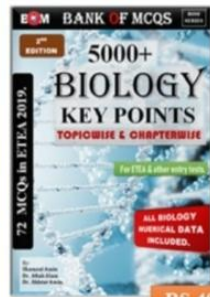
A) Straight direction
B) Parallel but straight
C) Parallel but opposite
D) Parallel, opposite and folded spiral

Hints: The two chains of DNA occur side by side in a parallel, opposite and folded spirally. DNA is a double helix structure present in ladder form but spirally.

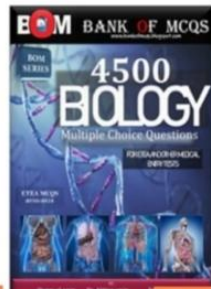
155. Which of the following furnaces is used for the production of wrought iron?

A) Open hearth furnace
B) Reverberatory furnace
C) Bessemer converter
D) Blast furnace

Hints: Reverberatory furnace is used for the production of wrought iron open hearth acid Bessemer converter are used for the



RS.400



RS.400



RS.450

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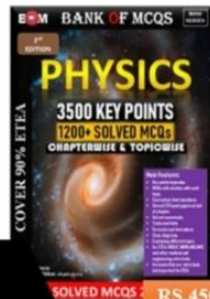


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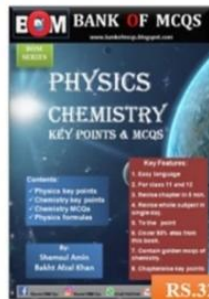
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- 6 books, on Rs.2150



RS.450



RS.450



RS.320

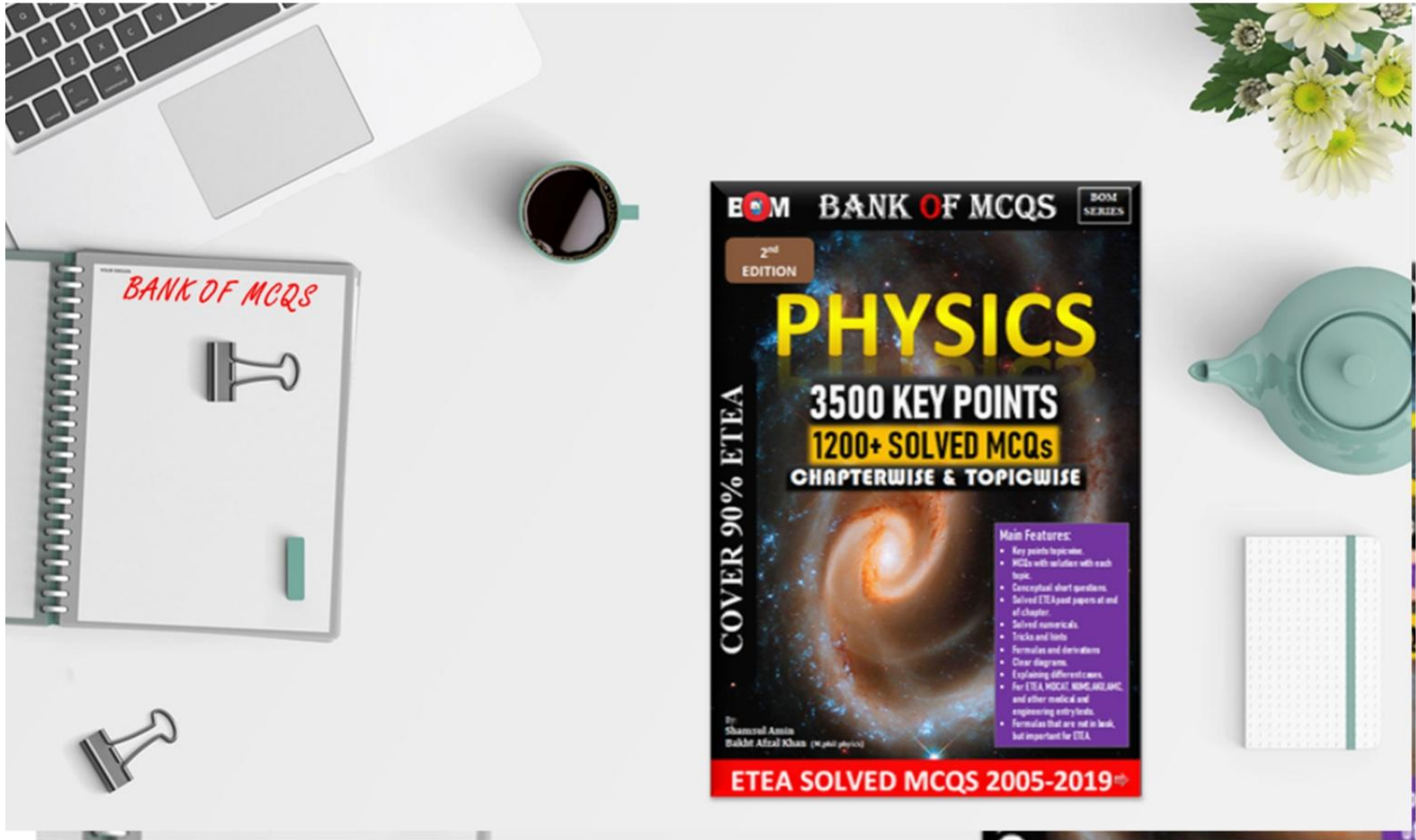
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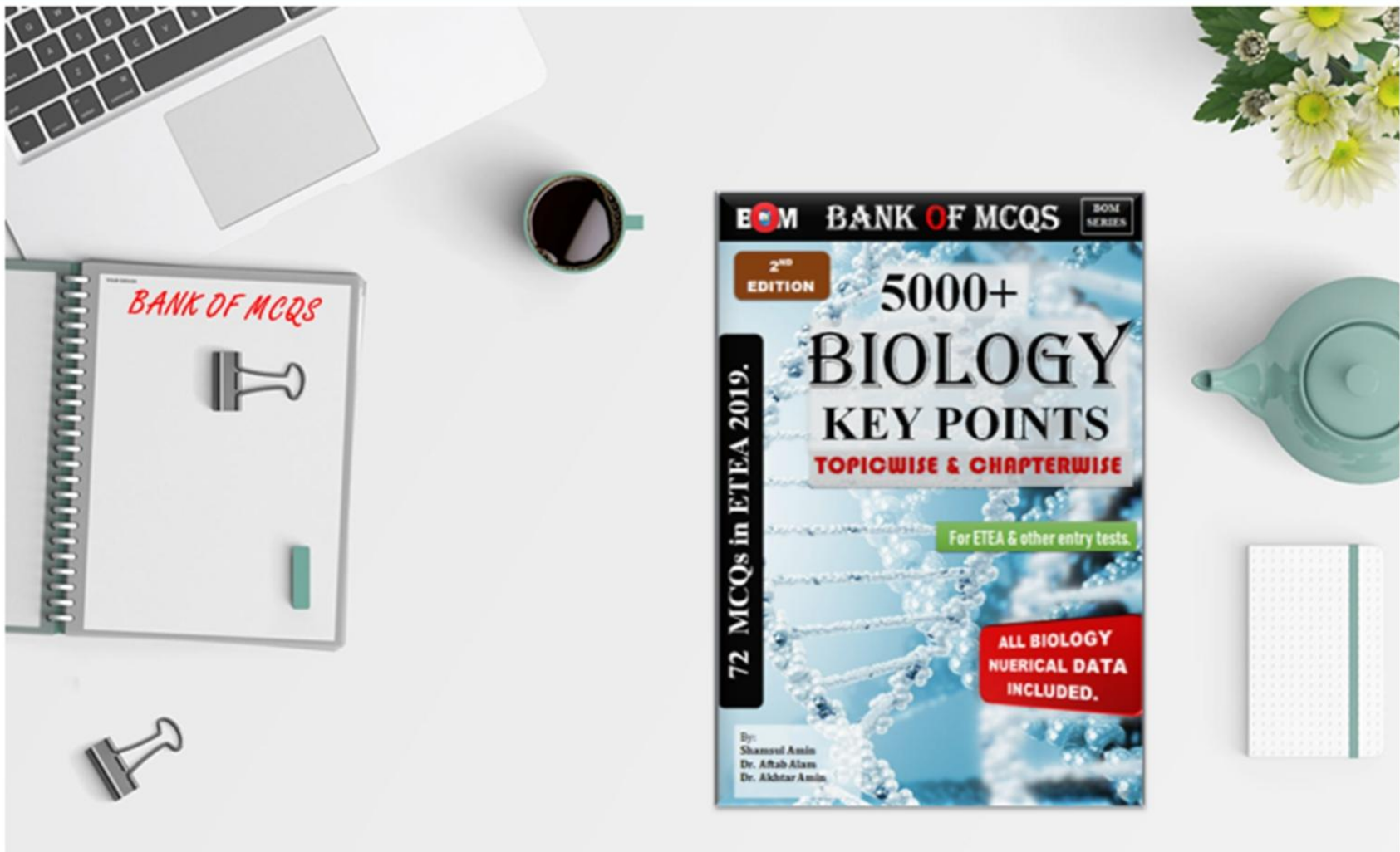
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By Shamsul Azim
Babbar Afzal Khan (M.Phil. physics)

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ENGINEERING 2012

S. No	MCQs	
1.	According to Gay-Lusac's variation of the volume of a sample of gas, at constant pressure a straight line was obtained where slope was found to be equal to: a) b) c) d) 273 1 v 273 0 v 273 1 P 273 0 P Hints: increasing temp of gas by 1° C, volume of gas will be increased by $\frac{1}{273}$ time to volume at 0°C (V ₀) ANSWER (b)	form ionic bond. ANSWER (a)
2.	If x be the height of a person and t be the time taken for x then is _____ d t dx a) velocity b) acceleration c) Growth d)None ANSWER (c)	5. The probability of either less than 1 or greater than 6 in rolling die is : _____ a) zero b) 1 c) d) 31 41 Hints: sample space = {1,2,3,4,5,6,} event= A = { } P (A) = n (A) /n (S) = 0 Answer :(a)
3.	The binding energy for nucleus 'A' is 7.7MeV an that for nucleus 'D' is 7.8 MeV. Which nucleus has the larger mass? a) Nucleus A b) Nucleus B c) More information is need d) None Hints: B.E relates to loss in mass when a nucleus Is formed BE ∝ loss in mass. ANSWER (a)	6. What is the magnitude of the linear momentum of a particle if its De Broglie's wavelength is 0.02 mm? a) 0.5 h b) 50 h c) 5×107 h d) 5×1018 h Hints: As $P = \frac{h}{\lambda} \lambda = 0.02nm = 0.02 \times 10^{-9} m$ so $p = \frac{h}{0.02 \times 10^{-9}} = 50 \times 10^9 h = 5 \times 10^{10} h$ Answer : (c)
4.	Which one will show ionic bonding? a) N a H b) PbCl4c)H Cl (gas) d)PCl3 Hints: Alkali metals (Na) always	7. $\lim_{x \rightarrow \infty} (1 + \frac{1}{x})^x = ?$ a) x b) $\frac{1}{x}$ c) e d) ∞ Hints: theorem. Answer: (c)
		8. Choose the correct electronic configuration for Scandium (Z=21) : a) 2s2 2 s2 2p6 3s2 3p6 3d1 4s1 b) 1s2 2s2 2p6 3s2 3p6 3d1 4s2 c) 1s2 2s2 2p5 3s2 3p6 3d1 4s8 d) 1s2 2s2 2p5 3s2 3p6 4s2 4p1 Hints: ${}_{21}\text{Sc} = 1s^1 2s^2 2p^6 3s^2 3p^6 3d^1 4s^2$ Answer : (b)



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9. An alternating current is represented by the equation . Which one of the following equations represent an alternating current that has half the amplitude an double the frequency? t I \square sin0 \square

a) $I = 2 I_0 \sin 2\omega t$

b) $2I = 2I_0 \sin \frac{1}{2} \omega t$

c) $I = \frac{1}{2} I_0 \sin 2 \omega t$

d) $2I = I_0 \sin \omega t$

Answer: (c)

10. As you have not prepared your work ____

a) you may not fall in the examination

b) you could prepare harder next time

c) you would do better in the examination

d) you are not likely to do well this time.

Hints: sentence starts with "As" which is a subordinating conjunction. It is used in compound sentences. The first clause is subordinative and need a result clause.

Answer: (a)

11. Which one of following electronic sub-shells the lanthanides have in the process of filling?

a) 4f b) 5f c) 4d d) 5d

Hints: in lanthanides 4f is in the process of completion.

Answer: (a)

12. If your body mass is 66.26 kg and you are running at the speed of 10ms⁻¹ what will be the De Broglie wave length associated with you?

(h = 6.626×10³⁴js)

a) 10.0×10⁻³⁴m b) 10.0×10³⁴m

c) 5.0×10³⁴m d) 2.0×10³³m

Hints: $\lambda = \frac{h}{p} = \frac{h}{mv} = \frac{6.626 \times 10^{-9}}{6626 \times 10} = 1 \times 10^{-36} \text{ m}$

Answer : (b)

13. If X = {a, b, c, d} Y = {1,2,3,4}. Then which of the following is a bijective function from x to y?

a) {(a,1), (b,4), (c,2), (d,1)}

b) {(c,1), (d,4), (b,1),

c) (a,3)} c) {(d,3), (b,4), (a,2), (c,1)}

d) {(b,2), (c,2), (a,3), (d,4)}

Hints: (I) Domain = {a, b, c, d,} (ii)

Non repeated abscissa. (iii) Range

= {1, 2, 3, 4,} (iv) Non repeated ordinate one-one and onto function.

Answer: (c)

14. Nuclear fission occurs when a:

a) light nucleus is split by neutrons

b) light nucleus is split by alpha particles

c) heavy nucleus is split by alpha heavy particle

d) heavy nucleus is split by neutrons

Hints: ${}_0n^1 + {}_{92}U^{235} \rightarrow {}_{56}Ba^{141} + {}_{36}Kr^{92} + 3{}_0n^1 + 200\text{Mev}$

Answer: (d)

15. $\frac{d}{dx} \text{sech } x = ?$

(a) tan h x sech x (b) - tanh x sech x

(c) cosh x (d) - cosh x

Hints: Use $\frac{d}{dx} \text{sech } x = \frac{d}{dx} \left(\frac{2}{e^x + e^{-x}} \right)$

Answer: (b)

16. Becquerel is the unit of:

(a) activity (b) decay constant

(c) half-life (d) mean life

Hints: Becquerel is equal to 1 dis/sec.



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of action is same.

Answer: (b)

26. The total energy of a Hydrogen atom in its ground state is:
(a) zero (b) positive (c) negative (d) None

Hints: $E_n = \frac{-13.6\text{ev}}{n^2}$ Hence negative.

Answer : (c)

27. Atomicity is considered as the:
(a) number of atoms present in 1g of a substance.
(b) number of atoms present in a molecule
(c) number of neutrons present in an atom
(d) number of sub-atomic particle present in an atom.

Answer: (b)

28. $\int e^{10x} dx = ?$

- a) $\frac{e^{-10x}}{-10}$
b) E^{10x}
c) $\frac{e^{-10x}}{10} + c$
d) $\frac{e^{-10x}}{10}$

Answer: (c)

29. Kirchoff's first law is based upon law of conservation of:
(a) charge (b) energy (c) mass (d) momentum

Hints: KCL \rightarrow Law of conservation of charge

Answer: (a)

30. She does not wash clothes on Friday:
Passive form of the sentence is:
(a) clothers are not being washed by her on Fridays.
(b) clothes are not washed by her on Fridays.
(c) Clothes were not washed by her

on Fridays.

(d) clothes were not being washed by her on Fridays

Hints: the tense of the sentence is present simple and use of "does" make it emphatic.

Answer: (b)

31. In the periodic table period represents:
(a) The number of electron in the outer most shell
(b) The metallic and nonmetallic characters of the elements
(c) The chemical properties of an element
(d) The number of the shells in an element

Hints: Groups correspond s, p, d, f, sub shell while periods corresponds shell.

Answer: (d)

32. The asymptotes of the hyperbola are

$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ are:

- a) $x = \pm \frac{b}{a} y$
b) $y = \pm \frac{b}{a} x$
c) $y = \pm \frac{a}{b} x$
d) $x = \pm \frac{a}{b} y$

Hints: $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 0$, we get $y = \pm x =$

$\pm \frac{b}{a} x$

Answer: (c)

- 33.1 Which of the following rays has the longest wavelength ?

(a) infrared rays (b) ultraviolet rays
(c) Gamma rays (d) x-rays

Hints: Order of increasing wavelength is gamma < x-rays < UV < IR < μ wave < Radio IR has



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what will be the order of the reaction?

- (a) first order kinetics (b) second order kinetics
(c) third order kinetics (d) fractional order kinetics

Hints: expression for half-life is $t_{0.5}$

$= \frac{1}{k(n-1)}$ n = order of reaction, may

be 0, 1, 2, 3, or 5 for 2nd order reaction, Half-life is inversely proportional to initial concentration of reactants.

Answer: (b)

90. $\int \frac{1}{x} dx = ?$

- (a) $\log_e x + c$ (b) $\log x + c$ (c) $\frac{x^2}{2}$

+c (d) $\frac{e^{2x}}{2} + c$

Answer: (b)

91. The binding energy per-nucleon is greater for:

- (a) lighter nuclei (b) heavy nuclei
(c) intermediate nuclei (d) None

Hints: intermediate nuclei are most stable.

Answer: (d)

92. The standard molar enthalpy of formation is denoted by:

- (a) ΔH (b) ΔH_0 (c) ΔH_{0273} (d) ΔH_{0298}

Hints: standard molar enthalpy of formation is measured at 25^o C or K, 1 atm pressure.

Answer: (d)

93. The acute angle formed by two non-perpendicular intersecting lines is given by:

a) $\tan \theta = \frac{m_2 - m_1}{1 + m_2 m_1}$

b) $\tan \theta = \frac{m_1 + m_2}{1 + m_2 m_1}$

c) $\tan \theta = \frac{m_2 + m_1}{1 + m_2 m_1}$

d) $\tan \theta = \frac{1 + m_2 + m_1}{m_2 - m_1}$

Answer: (a)

94. When a wave comes across an obstacle, it bends around the obstacle. This phenomenon of bending around of a wave is called:

- (a) polarization (b) interference
(c) reflection (d) diffraction

Hints: By definition

Answer: (d)

95. Choose the correct statement about Born Haber cycle:

(a) Born Haber cycle is a process for applying Hess's law to the standard enthalpy changes in the formation of covalent compounds.

(b) Born Haber cycle is a process for applying Hess's law to the standard enthalpy changes in the formation of ionic compound.

(c) Born Haber cycle is a process for applying Hess's Law to the standard enthalpy changes in the formation of ionic and covalent compounds.

(d) None

Hints: Born Haber cycle is the application of Hess's law, through which we can determine the lattice energy of an ionic compound.

Answer: (b)

96. $\frac{d}{dx} (x)$ is:

a) $\frac{x}{x^2}$

b) $\frac{x^2}{x}$

c) $\frac{x}{x}$

d) $\frac{x}{x}$

d) $\frac{x}{x}$

Answer: (d)

97. Longitudinal waves cannot be:



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momentum?

- (a) momentum is the product of mass and velocity (b) momentum is conserved only in elastic collision (c) momentum is conserved by all bodies in a collision (d) momentum is conserved providing no external forces act

Hints: By definition

Answer: (d)

132. $\frac{d}{dx} \cos x =$

- (a) $\sin x$ (b) $\sec x$
(c) $-\sin x$ (d) $\tan x$

Answer: (a)

133. A uniform meter rod of mass 50 grams balance at distance of 20 cm from one end. The man at the other end is:

- (a) 50 gm (b) 25 gm (c) 75 gm (d) 100 gm

Hints: 2nd condition of equilibrium:

$$20x = 50 \times 50 \Rightarrow x = 125 \text{ gm}$$

Answer: (c)

134. If $\frac{a^{n+1}+b^{n+1}}{a+b}$ be an A.M between a and b then n?

- (a) -2 (b) 0 (c) 1 (d) -1

Answer: (b)

135. $\frac{1}{18}, \frac{1}{14}, \frac{1}{10}, \frac{1}{6}, \dots$ is _____

- (a) Geometric sequence (b) Arithmetic sequence (c) Asymptotic sequence (d) Harmonic sequence

Hints: Harmonic sequence reciprocal of A.P

Answer: (d)

136. Two wires P and Q have resistances R_p and R_q respectively. Wire P is twice as long as wire Q and has

twice the diameter of wire Q. the wire are made of the same material.

What is the ratio R_p / R_q ?

- (a) 0.5 (b) 1 (c) 2 (d) 4

$$\text{Hints: } R_p = \frac{4\rho l_p}{\pi d^2 p}, R_q = \frac{4\rho l_q}{\pi d^2 q}$$

$$\text{After conditions } R_p = \frac{4\rho(2l_p)}{\pi(2d_q)^2} = \frac{1}{2}$$

$$(R_q) \rightarrow \frac{R_p}{R_q} = \frac{1}{2} = 0.5$$

Answer: (a)

137. Dimethyl ether and ethanol is an example of:

- (a) chain isomerism (b) position isomerism
(c) metamerism (d) functional group isomerism

Hints: $\text{CH}_3\text{-O-CH}_3$ Dimethyl ether
 $\text{CH}_3\text{-CH}_2\text{-OH}$

Answer: (d)

138. If A (x_1, y_1), B (x_2, y_2), C (x_3, y_3) are the vertices of a triangle ABC and a, b, c be the lengths of its side then

$$\left(\frac{ax_1+bx_2+cx_3}{a+b+c}, \frac{ay_1+by_2+cy_3}{a+b+c} \right)$$

- (a) ortho-center (b) centroid
(c) In-centre (d) circum-centre

Answer: (c)

139. How is it possible to distinguish between the isotopes of uranium.

- (a) their nuclei have different charge and different mass, and they emit different particles when they decay.

(b) their nuclei have the same charge but different mass

(c) their nuclei have different charge but the same mass

(d) Their nuclei have the same charge and mass, but they emit different particle, when they decay.

Hints: isotopes are the nuclei of same element having same atomic



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(c) 2-Bromo ethanol (d) Ethylene glycol

Hints: ethylene oxide + HB r \rightarrow 2 bromo ethanol

Answer: (c)

167. Which of the following is correct?

(a) Right bisectors of a triangle are concurrent

(b) Medians of a triangle are concurrent

(c) Altitudes of a triangle are concurrent

(d) All of the above

Answer: (d)

168. The following particles are each accelerated from rest through the same potential difference. Which one completes the acceleration with the greater momentum?

(a) - particle (b) electron

(c) Neutron (d) proton

Hints: momentum of a-particle $\sqrt{2mk}$ m and k of a-particle is greatest among all of the given particles.

Answer: (a)

169. Select the compound that will not be easily oxidized:

(a) CH₃CH₂OH (b) (CH₃)₃COH

(c) CH₃OH (d) (CH₃)₂CHOH

Hints: tertiary alcohol is more stable to oxidation

Answer: (c)

170. If $A = \{0\}$ then the number of elements in the power set of A =

(a) 0 (b) 1 (c) 2 (d) 3

Hints: the appropriate time expression is needed in this question. Last night refers to period of time and "since" is the correct option.

Answer: (c)

171. It has been raining continuously _____ last night.

(a) Since (b) For (c) From (d) With

Hints: $a = \{O\}$, $P(a) = \{\emptyset, \{O\}\}$

Answer: (a)

172. Two heating coils X and Y of resistance Rx and Ry respectively deliver the same power when 12V is applied across x and 6V is applied across y. what is the ration of Rx/Ry=?

(a) 1/4 (b) 6 (c) 2 (d) 4

Hints: $P_x = \frac{144}{R_x}$ & $P_y = \frac{36}{R_y}$ now $\frac{144}{R_x} =$

$\frac{36}{R_y} \rightarrow \frac{R_x}{R_y} = 4$

Answer: (d)

173. The acid catalyzed dehydration mechanism of alcohols is best described by:

(a) SN1 (b) SN2 (c) E1 (d) E2

Hints: $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH} \xrightarrow{\text{H}_2\text{SO}_4} \text{CH}_3 - \text{CH} = \text{CH}_2 + \text{H}_2\text{O}$ This reaction is an elimination reaction and one step reaction so, E₂ mechanism.

Answer: (d)

174. Molecular formula of silica is:

(a) SiO₄ (b) SiO₃ (c) SiO₂ (d)

Na₂SiO₃

Answer: (c)

175. Let V₁ and V₂ be two vectors, If where is scalar, then V₁ and V₂ are called:

(a) equal (b) parallel (c) perpendicular (d) coincident

Hints: $v_2 = 2v_1$ Their direction is same and magnitude is different so they are parallel.

Answer: (b)

176. The electric field at a certain



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D) None of the above

Hints: Restistance of LDR decreases upon increasing the intensity of falling light. It is used as light sensors.

Answer: (b)

17. Remember to brush your teeth after dinner, she said.

Indirect form of the sentence is.

A) She told him to remember to brush his teeth after dinner.

B) She reminded him to brush his teeth after dinner.

C) She advised him to remember to brush his teeth after dinner.

D) She said to him to remember to brush his teeth after dinner

Hints: indirect narration: Mood of the sentence is advise.

Answer: (c)

18. Which of the following represent the bile salts?

A) Bilirubin

B) Biliverdin

C) Haemoglobin

D) Both A) and B)

19. Benzene undergoes substitution reactions more easily than addition reactions because:

A) of its cyclic nature

B) of having three double bonds

C) of aromatic character

D) of delocalization of electrons

Hints: benzene is stable due to the delocalization of pi electrons. These bonds are strong and not broken down easily during reaction.

Benzene gives electrophilic substitution reactions and not addition reactions although benzene is highly unsaturated.

Answer: (d)

20. The maximum kinetic energy of an electron ejected from a metal by photon depends on:

A) The photon's frequency only

B) The metal work function

C) The intensity of incident light

D) None of the above

Hints: in photoelectric effect the KE of elec depend only on f of photon.

But the current depends on the intensity of light. $KE_{\max} = hf - \phi$

Answer: (a)

21. A spring system executes simple harmonic motion. If a load is added to it then the time period of spring-mass system will be:

A) increased B) decreased

C) the same D) halved

Hints: $T = 2\pi \sqrt{\frac{m}{k}}$ So, $T \propto \sqrt{m}$

If load is added T increases but the frequency will decrease.

Answer: (a)

22. Conversion of excess glucose into fat is known as:

A) Glycolysis B) Lipogenesis

C) Ketogenesis D) Glycogenesis

Hints: Lipogenesis means formation of lipids.

Answer: (b)

23. Ring test is shown by compounds having:

A) Sulphate radical B) Chloride radical

C) Nitrate radical D) None of the above

Hints: Ring test is shown by nitrate salts. As a result brown ring ($FeSO_4 \cdot NO$) is formed.

Answer: (c)



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61. The uncertainty recorded in the radius of a sphere is 1.6%. The uncertainty in the area of that sphere is:
A) 4.8% B) 3.2%
C) 1.6% D) 0.8%
Hints: Area sphere $A = 4\pi r^2$,
Uncertainty in $r = 1.6\%$ now total uncertainty $1.6 \times 3.2\%$
Answer: (b)
62. How many atoms of oxygen in R.N.A are greater than D.N.A?
A) One B) Two
C) Three D) Four
Hints: RNA contain ribose sugar that contains one more oxygen than deoxyribose sugar in DNA.
Answer: (a)
63. Bakelite is obtained from:
A) Adipic acid and hexamethylenediamine
B) Dimethyl terephthalate and ethyl glycol
C) Neoprene
D) Phenol and formaldehyde
Hints: Bakelite is condensation polymer and is obtained by the chemical combination of phenol & formaldehyde.
Answer: (d)
64. Consider the following endothermic reaction: $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$
What will happen to the equilibrium if the temperature of the system is raised?
A) The equilibrium will shift in the backward
B) The equilibrium position will suffer no change
C) The equilibrium will shift in the forward direction
D) All of the above
Hints: Reaction is endothermic thus if temp is increased then equilibrium will shift to right.
Answer: (c)
65. A hunter aiming a bird in a tree should aim:
A) A little above the bird B) A little below the bird
C) Exactly at the bird D) Very high
Hints: Due to gravity a bullet follows a projectile motion in a parabolic path.
Answer: (a)
66. A bacterium that converts NO_2 to NO_3 is:
A) Rhizobium B) Bacillus
C) Nitrosomonas D) Nitrobacter
Hints: Nitrosomonas converts NH_4 to NO_2 ; Rhizobium change N_2 to NH_3 ; whereby bacillus are rod shaped bacterium.
Answer: (d)
67. Why it is so that if aromatic compounds, burned in air, produce a very smoky flame?
A) Aromatic compound cannot be completely converted into CO_2 and other products during burning
B) The available amount of oxygen present in air is not sufficient to completely burn available compound
C) Aromatic compound produces compounds on burning that are of black colour
D) None of the above
Hints: in aromatic compounds the % age of carbon is greater than aliphatic compounds.
Answer: (a)



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compounds hydrogen bonding is possible?

A) PH₃ B) CH₄ C) NH₃ D) SiH₄

Hints: In NH₃, H is directly attached with nitrogen.

Answer: (c)

167. Which of the following are ohmic materials?

A) Semiconductors B) Tungsten filament

C) Thermistor D) Metals

Hints: Resistance of metallic conductor doesn't depend on voltage applied. Metallic conductors obey ohm law

Answer: (d)

168. Tobacco is a:

A) Long day plant B) Short day plant

C) Day neutral plant D) Intermediate plant

Answer: (b)

169. Ripening of fruits can be promoted by:

A) Gibberellic acid B) Indole acetic acid

C) Florigen D) Ethylene gas

Hints: Usually immature fruits are kept in reserves and Ethylene gas is used to ripen them.

Answer: (d)

170. Sucrose sugar is considered as:

A) Monosaccharide B) Oilgosacchides

C) Polysaccharides D) All of the above

Hints: sucrose sugar is a disaccharides formed by the combination of glucose & fructose. It is the simplest member of oilgosacchides.

Answer: (b)

171. In the nuclear reaction

${}_{11}\text{Na}^{24} + {}_{12}\text{Mg}^{24} + X$, the particle X is;

A) Electron B) Positron

C) Proton D) Neutron

Hints: It is beta decay in which atomic number is increased by one unit and no change in mass number. Neutron is changed into proton.

Answer: (b) (a)

172. The least toxic excretory product is:

A) Ammonia B) Urea

C) Uric acid D) Fatty acid

Hints: The least toxic ammonia.

Answer: (c)

173. Which one of the following will give an ionic product?

A) CH₃ CH₂ OH + PCI₅ B) CH₃ CH₂ OH + Na

C) CH₃ CH₂ OH + PCI₃ D) CH₃ CH₂ OH + 5oCl₂

Hints: CH₃ CH₂OH + Na → CH₃

CH₂ ONa + $\frac{1}{2}$ H₂ Ionic product

Answer: (b)

174. The angular displacement made by the minute hand of a watch after 5.0 minutes is:

A) 300 B) 1200 C) 1800 D) 3600

Hints: $\theta = \omega t \rightarrow \frac{180^\circ}{60\text{min}} \times 5 = \frac{360^\circ}{60\text{min}}$

$\times 5 = 6 \times 5 = 30^\circ$

Answer: (a)

175. The intensity of a wave is:

A) Directly proportional to amplitude

B) Directly proportional to (amplitude)²

C) Inversely proportional to amplitude

D) Inversely proportional to



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- (d) to ask the public to help with a noble cause
Hints: Expression “dirty linen washed in public” means to discuss private affairs in public gatherings.
Answer: (b)
-
51. Harmonic means between 3 and 7 is:
(a) $\frac{5}{21}$ (b) $\frac{21}{5}$ (c) 5 (d) $\sqrt{21}$
Hints: Harmonic mean between 3 and 7 is $H.M = \frac{2ab}{a+b} = \frac{2 \times 3 \times 7}{3+7} = \frac{21}{5}$
Answer: (b)
-
52. Choose the correct name according to IUPAC nomenclature:
(a) 2 ethyl-3methyl pentane (b) 3-methyl-cyclo hexane
(c) 3-ethyl-2methyl pentane (d) 3-ethyl-4methyl pentane
Hints:
Answer: (c)
-
53. A 60 kg man in a lift which is moving upward with an acceleration of 4.9 ms^{-2} will have apparent weight of:
(a) 588 N (b) 294 N (c) 58.8 N (d) 882 N
Hints: $T = m(g + a) = 60(9.8 + 4.9) = 882 \text{ N}$
Answer: (d)
-
54. $\int \frac{1}{\sqrt{3} + 1+x^2} dx = ?$
(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{6}$
Hints: $[\tan^{-1}] \frac{1}{\sqrt{3}} = \tan^{-1} 0 = \frac{\pi}{6} - 0 = \frac{\pi}{6}$
Answer: (d)
-
55. Which molecular formula indicates 2-methyl pentane
(a) C_5H_{12} (b) C_4H_{20} (c) C_6H_{14} (d) C_6H_{12}
Hints: CH_3
Answer: (c) $\text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3$
-
56. the orbital velocity of satellite in an orbit around the earth depends upon
(a) value of g (b) radius of earth
(c) radius of the orbit (d) all of these
Hints: $V = \sqrt{gR}$
Answer: (c)
-
57. ${}^n C_r = ?$
(a) $\frac{n!}{(n-r)!r!}$
(b) $\frac{n!}{(n-r)!}$
(c) $\frac{n!}{r!}$
(d) $\frac{(n-1)!+r!}{n!}$
Answer: (a)
-
58. How many isomers are possible for pentane?
(a) 2 (b) 3 (c) 4 (d) 5
Hints: n – pentane, Is o pentane, neo-pentane
Answer: (b)
-
59. When the drag force on the object becomes equal to its real weight then the
(a) object will become stationary
(b) object will fall freely
(c) object will fall with terminal velocity
(d) object will fall with critical velocity
Hints: $T = m(g-a)$, $a = g$, $T = 0$
Answer: (c)
-
60. You cant agree with both of them
(a) make your opinion up
(b) make your mind up
(c) make brain up
(d) make up your mind
Hints: “make up mind” means to think and decide.
Answer: (d)



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- (c) 1-Butanol (d) 2-Methyl-2-Propanol
Hints: Iodoform reaction if given by alcohols which possess one methyl group to $[\text{CH}_2-\text{OH}]$
Answer: (b)
-
106. The rate of change of electric potential with respect to displacement is equal to:
(a) Potential gradient (b) electric potential energy
(c) electric intensity (d) electric flux
Hints: $E = \frac{\Delta v}{\Delta r}$
Answer: (c)
-
107. j.(k xi)
a) 1 b) I c) j d) k
Hints: $k \times i = +j \rightarrow j \cdot j = i$
Answer: (a)
-
108. Which of the following compounds will not be easily oxidized?
(a) Primary alcohol (b) secondary alcohol
(c) tertiary alcohol (d) aldehyde
Hints: tertiary alcohol does not possess α -hydrogen, that is why it cannot be oxidized.
Answer: (c)
-
109. The correct expression for the energy of the charged capacitor is:
(a) $\frac{1}{2} \frac{C^2 V}{C}$ b) $\frac{1}{2} \frac{Q^2}{C}$ c) $\frac{1}{2} QV$ d) $\frac{1}{2} C^2 V^2$
Hints: $U = QV$
Answer: (b)
-
110. The president _____ on TV tonight
(a) speaks (b) will speak
(c) has spoken (d) is speaking
Answer: (b)
-
111. $\sin 3\alpha = ?$
a) $4\sin^3 \alpha - 3\cos \alpha$ b) $3\cos^3 \alpha - 4\cos \alpha$
c) $3\sin \alpha - 4\sin^3 \alpha$ d) $4\sin \alpha - 3\sin^3 \alpha$
Hints: Triple angle identity
Answer: (d)
-
112. The acid – catalyzed dehydration mechanism for alcohol is best described as a / an:
(a) E_1 b) E_2 c) S_N^1 d) S_N^2
Hints: dehydration is elimination reaction.
Answer: (a) & (b)
-
113. The resistance of a conductor having a length of one meter and an area of cross section one square meter is called
(a) Conductance (b) resistivity
(c) conductivity (d) mho
Hints: $p = \frac{RA}{L}$
Answer: (b)
-
114. $\sin\left(\frac{2\pi}{2} - \theta\right) = ?$
(a) $\sin \square$ (b) $\cos \square$ (c) $\square \sin \square$ (d) $-\cos \square$
Answer: (d)
-
115. Ethers are considered as:
(a) Lewis acids (b) Lewis bases
(c) both a & b (d) None of these
Hints: Ether possess lone pair of \rightarrow_{es} which acts as base.
Answer: (b)
-
116. The resistors of 5Ω , 4Ω and 3Ω are connected in parallel. If the potential difference across 4Ω resistor is 6 volt, then the potential difference across 5Ω and 3Ω will be:
(a) 6 volt (b) 3 volt (c) 12 volt (d) 9 volt
Hints: in parallel, voltage is same across all.



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- Answer: (a)
117. The period of $3\sin \frac{x}{3}$ is:
(a) π (b) 2π (c) 3π (d) 6π
Hints: period is $\frac{2\pi}{\frac{1}{3}} = 6\pi$
Answer: (d)
118. Ethanol is isomeric with:
(a) Ethanal (b) Di-ethyl ether
(c) dimethyl ether (d) propanone
Hints: $\text{CH}_3 - \text{CH}_2 - \text{OH}$ $\text{CH}_3 - \text{O} - \text{CH}_3$
Functional group isomerism.
Answer: (c)
119. The circuit in which the terminal voltage of the battery is equal to the e m f of the battery is the:
(a) open circuit (b) close circuit
(c) short circuit (d) electric circuit
Hints: $\epsilon = V_t + I r$ put $I = 0$
Answer: (a)
120. Running into room,
(a) a rug caught her foot and she fell
(b) she caught her foot on a rug and she fell
(c) her foot was caught on a rug and she fell
(d) she had fallen after catching her foot on a rug.
Hints: (d) dest empressees the combination of past
Simple tense and past perfect tense.
Answer: (d)
121. With usual notation, the value of $a - b + c$ is:
(a) $s + b$ (b) $s - b$ (c) $2s - b$ (d) $2(s - b)$
Hints: Use $s = \frac{a+b+c}{2}$
Answer: (d)
122. Which of the following will give a positive test with Fehling's solution?
(a) acetic acid (b) ethyl acetate
(c) formaldehyde (d) acetone
Hints: Aldehyde give Fehling solution test.
Answer: (c)
123. If the current in parallel conductor be flowing in opposite direction then two conductor will:
(a) attract each other (b) repel each other
(c) neither attract nor repel each other
(d) none of these
Hints: magnetic field support each other.
Answer: (b)
124. Radius of the described circle opposite to the vertex A is:
(a) $\frac{\Delta}{a}$ (b) $\frac{\Delta}{s}$ (c) $\frac{\Delta}{s-a}$ (d) $\frac{s-a}{\Delta}$
Answer: (c)
125. Which of the following compound on treatment with NaHCO_3 will liberate CO_2 (g)
(a) Acetic acid (b) ethyl amine
(c) ethyl alcohol (d) phenol
Hints: alcohol phenol are weak acid & can't react with weak base.
Answer: (a)
126. The magnetic field due to current in solenoid can be increased by
(a) increasing the number of turns
(b) using soft iron core
(c) increasing the current (d) all of these
Hints: $B = \mu_0 n I$
Answer: (d)
127. The domain of the function $y = \cos^{-1} x$ is:
(a) $0 \leq x \leq 1$ (b) $-1 \leq x \leq 1$
(c) $1 \leq x \leq 2$ (d) $-2 \leq x \leq 2$



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increases \rightarrow density at ortho and para so electrophile can attack.
Answer: (d)

139. When the frequency of alternating voltage in capacitive circuit increases the alternating current
(a) decreases (b) increases
(c) remains the same (d) none of these

Hints: $I = \frac{V}{X_C} = \frac{V}{1/\omega C} = V\omega C$
Answer: (b)

140. More than one student _____ absent the day before yesterday.
(a) was (b) were (c) had been (d) have been

Hints: "more than one student" means plural. "were" is the correct choice for the past tense.
Answer: (b)

141. $\omega^{12} + \omega^{58} + \omega^{95} = ?$

(a) 0 (b) 1 (c) ω (d) $-\omega$
Hints: $\omega^{12} + \omega^{58} + \omega^{95} = (\omega^3)^4 + \omega^1$
 $(\omega^3)^{19} + \omega^2 \cdot (\omega^3)^{31} = 1 + \omega + \omega^2 = 0$
Answer: (a)

142. Compared to benzene nitration of toluene takes place at:

(a) the same rate (b) slower rate
(c) faster rate (d) a and b both
Hints: Methyl group is activating group which increases reactivity of benzene.
Answer: (c)

143. In RLC series circuit when the frequency of AC source is very high then such circuit will be

(a) resistive circuit (b) capacitive circuit
(c) resonance circuit (d) inductive circuit

Hints: at high frequency $X_L > X_C$
Answer: (d)

144. Magnitude of the vector $a = (i - j) + (j - i) + (k - j)$ is

(a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) $2\sqrt{2}$ (d) $2\sqrt{3}$
Hints: $|(i - j) + (j - i) + (k - j)| = |i - j + j + k - j| = |j + k| = \sqrt{1^2 + 1^2} = \sqrt{2}$
Answer: (b)

145. How many nucleons are there in an atom of ${}_{92}^{235}\text{U}$

(a) 92 (b) 235 (c) 123 (d) 327
Hints: No of nucleons = $X + N = A$
Answer: (b)

146. The carrier waves on which the low frequency sound waves are super imposed are called

(a) micro waves (b) short waves
(c) modulated waves (d) medium waves
Answer: (c)

147. Let m_1 and m_2 be the slopes of the lines l_1 and l_2 respectively l_1 is perpendicular to l_2 if:

(a) $m_1 = m_2$ (b) $m_1 m_2 = 1$ (c) $m_1 m_2 = -1$ (d) $m_1 + m_2 = 0$
Hints: $m_1 \times m_2 = -1$, If $l_1 \perp l_2$
Answer: (c)

148. By which method order of reaction can be determined?

(a) differential method
(b) Ostwald's isolation method
(c) graphical method (d) all of the above
Answer: (d)

149. The applied force at which solids can be determined?

(a) strength (b) Ductility (c) stiffness
(d) toughness



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160. "Moon" is to 'Satellite' as 'Earth' is to _____
(a) solar system (b) sun
(c) planet (d) asteroid
Hints: Here the analogy is based on the similarity. Moon is one of the satellites. Similarly Earth is one of the asteroids.
Answer: (d)
161. If $(1+3i)$ is one of the roots of the quadratic equation, then the equation is:
(a) $x^2 - 2x + 10 = 0$ (b) $x^2 + 2x - 10 = 0$
(c) $x^2 - 4x + 8 = 0$ (d) $x^2 - 10 = 0$
Hints: If one root is $1+3i$, then other will be $1-3i$
 $S = 1+3i+1-3i = 2$,
 $P = (1)^2 - (3i)^2 = 1 - 9i^2 = 1+9 = 10$
 $X^2 - Sx + P = 0$, $x^2 - 2x + 10 = 0$
Answer: (a)
162. If an ideal gas is allowed to expand adiabatically the work done by the gas is equal to:
(a) the loss of internal energy (b) the loss of entropy
(c) the rise in temperature (d) the decrease in pressure
Hints: During adiabatic $\Delta Q = 0$
Answer: (a)
163. The circuit which is built of silicon chip, and of transistor and capacitor is called:
(a) rectifier circuit (b) amplifier circuit
(c) operational amplifier (d) close circuit
Hints: Amplifier is a chip.
Answer: (a)
164. If n is a negative integer or a fraction, then the binomial expansion $(a+b)^n$ terminates:
(a) after n terms (b) after $n+1$ terms
(c) after $n+1$ terms (d) Never
Hints: If n is -ive or fraction then the series obtained from the expansion is infinite.
Answer: (d)
165. The vapour pressure of pure acetone is 347 mm Hg. A mixture of 58.0 g acetone and 2.0 g of water is made. According to Raoult's law, what is the partial pressure of the acetone in this mixture?
(a) 382 mm Hg (b) 298 mm Hg
(c) 242 mm Hg (d) 312 mm Hg
Hints: $p_{\text{Acetone}} = X_{\text{Acetone}} P^0 = \frac{1}{1.11} \times 347 = 312$
Answer: (d)
166. The inputs of gate are A and B, its output is Q then $Q = \frac{A+B}{A+B}$ represent the operation of:
(a) NAND gate (b) NOR gate
(c) XOR gate (d) OR gate
Hints: $A+B = Q$ is OR gate, Inverted output \rightarrow NOR
Answer: (b)
167. Let A and B any two matrices of the same order then $(A+B)^t =$
(a) $A^t - B^t$ (b) $A^t + B^t$ (c) $A + B^t$ (d) $A^t + B$
Answer: (b)
168. What energy in joules would a photon of light have at wave length 3×10^{-3} cm? $h = 6.6 \times 10^{-34}$
(a) 2.2×10^{-31} (b) 2.64×10^{-34} (c) 6.6×10^{-47}
(d) 6.6×10^{-21}
Hints: $E = \frac{hc}{\lambda}$
Answer: (d)
169. A clock is moving with the relativistic velocity with respect to



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- Answer: (c)
55. The Geostationary satellites are:
(a) stationary (b) Rotating with the speed of earth (c) rotating very fastly (d) rotating very slowly
Answer: (d)
56. Select the oxide which is in the solid state at room temperature
(a) N₂O₅ (b) N₂O (c) NO₂ (d) N₂O₃
Hints: N₂O₅ has higher mass and exist in solid state.
Answer: (a)
57. Phage-virus secretes an enzyme “lysozyme” form its:
(a) tail region (b) head region (c) neck region (d) capsule region
Answer: (a)
58. [ML⁻¹T⁻¹] are the dimensions of:
(a) angular momentum (b) power (c) impulse (d) viscosity
Hints: $F = 6\pi r v n$ or $n = F/r v = [ML^{-1}T^{-1}]$
Answer: (d)
59. Group 5th elements arsenic and antimony are considered as:
(a) metallic (b) non metallic (c) metalloids (d) transition elements
Hints: In group VA, N & P are nonmetals, As & Sb are metalloids and Bi is metal.
Answer: (b)
60. Much of mechanical digestion takes place in the
(a) Oesophagus (b) mouth (c) stomach (d) duodenum
Hints: Break down of solid food largely occur in mouth.
Answer: (b)
61. Styles _____ popular in the 1960s are reappearing in high fashion boutiques
(a) what have been (b) which have been (c) that have been (d) that were
Hints: “that were” is correct choice as it makes the sentence in past tense.
Answer: (d)
62. A two meter high tank is full of water. A hole is made in the middle of the tank. The speed of effect is
(a) 4.9 ms⁻¹ (b) 9.8 m s⁻¹ (c) 4.42ms (d) 3.75 m s
Hints: $v = \sqrt{2gh} = \sqrt{2 \times 9.8 \times 1} = 4.42ms$
Answer: (c)
63. The bleaching action of bleaching powder is due to —available chlorine it is the amount of chlorine.
(a) that is required for the preparation of bleaching powder (b) site free when excess of sulphuric acid is added to the bleaching powder. (c) that is required for the generation of the hypochlorite (d) Both B and C
Hints: $As CaOCl_2 + H_2SO_4 \rightarrow CaSO_4 + H_2O + Cl_2$
Answer: (b)
64. H.I.V contains
(a) two R.N.As (b) a single R.N.A (c) D.N.A and R.N.A (d) D.N.A
Hints: HIV is a group of enveloped viruses. Together with RNAs contain three enzymes.
Answer: (a)
65. The quantity which specified the



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resist viral infection is

- (a) Penicillin (b) histamine
(c) interferon (d) antigens

Hints: interferon is the protein produced by virus infected cells to protect other cells from the viral attack. Penicillium form which we can obtain penicillin, an antibiotic. Histamine is vasoconstrictor. Antigens are proteins that can produce antibodies.

Answer: (c)

88.

The powers of the objective and eye piece of telescope are 0.5 diopter and 10 diopter respectively. The magnifying power of telescope is:

- (a) 0.5 (b) 10 (c) 20 (d) 0.05

Hints: old course.

Answer: (c)

89.

The oxidation number of cobalt in $[\text{Co}(\text{en})_2\text{H}_2\text{O}(\text{CN})]^{2+}$

- (a) 2 (b) 3 (c) 4 (d) 5

Hints: $(\text{en})_2$ stands for ethylene diamine which carries no charge i.e. $(\text{en})_2 = 0$ & $\text{H}_2\text{O} = 0$ are neutral $\text{CN} = -1$, so $[\text{Co}(\text{en})_2\text{H}_2\text{O}(\text{CN})]^{2+} \times 0 + 0 + (-1) = x - 1 = +2 \rightarrow x = +3$

Answer: (b)

90.

Rust and smut belong to the phylum

- (a) zygomycota (b) ascomycota
(c) basidiomycota (d) deuteromycota

Answer: (b)

91.

She _____ her parents. They must be worried about her health.

- (a) had better call (b) had better called
(c) had better to call (d) better call

Hints: "had better" is a modal auxiliary which constitutes a

suggestion along with an undercurrent implied threat or warning.

Answer: (a)

92.

At constant temperature when the volume of the given mass of gas is doubled its density becomes:

- (a) double (b) one fourth (c) four times (d) half

Hints: $V_1 = V$, $V_2 = 2V$, $d_1 = \frac{m_1}{v}$,

$d_2 = \frac{m_2}{v}$ as $m_1 = m_2 = m$ so,

$d_1 = \frac{m}{v}$, $d_2 = \frac{m}{v}$ dividing both. $\frac{d_1}{d_2} =$

$\frac{m/v}{m/2v} = 2$,

$d_1 = 2d_2$ or $d_2 = d_1/2$ density is half to initial.

Answer: (d)

93.

Ammonium hydroxide was added to a salt solution deep blue color was obtained. The solution contains ions of:

- (a) Zn^{2+} (b) Cu^{2+} (c) Fe^{3+} (d) Ba^{2+}

Answer: (b)

94.

A network of tubules that runs through compact bone is called the:

- (a) Haversian canal (b) periosteum
(c) marrow (d) joint

Hints: Haversian canal are formed by concentric run of bone matrix and the central canal contains blood vessels. Haversian canals run through bone.

Answer: (a)

95.

The process which is performed quickly is:

- (a) isobaric process (b) Adiabatic process
(c) isothermal process (d) isochoric process



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- (a) C₅H₁₂ (b) C₅H₁₆ (c) C₆H₁₂
(d) C₆H₁₄

Hints: CH₃ – CH – CH₂ – CH₂ –
CH₃ 2-methyl pentane

Answer: (d)

117. In chlorophyll —al The group attached to prophyryne ring is:

- (a) hydroxyl group (b) methyl group
(c) carboxyl group (d) aldehyde group

Hints: Chlorophyll b has carbonyl group

Answer: (b)

118. The total driving force of the battery to draw current through a circuit is called:

- (a) voltage of battery (b) power of battery
(c) e. m. f of battery (d) all of these

Answer: (c)

119. In reforming process open chain hydrocarbons are converted into:

- (a) polymers (b) Branched chain hydrocarbons
(c) ring hydrocarbons
(d) Branched and ring hydrocarbon

Hints: Conversion of straight chain hydrocarbons into branched hydrocarbon by heating in the absence of oxygen by a catalyst is called as reforming.

Answer: (b)

120. The process of cell division result in:

- (a) two daughter cells (b) sister chromatids
(c) mitosis (d) unregulated growth

Hints: The process of cell division results in two daughter cells.

Answer: (a)

121. _____ in the world.

(a) our's is not one of the quickest response system

(b) our is not one of the quickest response systems

(c) our's is not one of the quickest response systems

(d) our is not one of the quickest response system

Hints: "Ours" constitutes the correct usage of a possessive case of the pronoun in this sentence.

Answer: (c)

122. two metallic wires are lying parallel. If the current in these wires be flowing in the same direction, the wires will:

(a) attract each other (b) repel each other

(c) have no force of attraction or repulsion

(d) remain stationary

Answer: (a)

123. An organic compound after fusion with sodium gives white precipitate when concentrated nitric acid and then silver nitrate solution was added to the filtrate. The compound is likely to be:

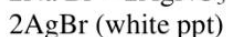
(a) CH₃CH₂CHO (b)

CH₃CH₂CH₂OH

(c) CH₃CH₂COOH (d)

CH₃CH₂CH₂Br

Hints: Wurtz reaction:



Answer: (d)

124. Chlorophyll is protected from intense light by:



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(c) Sulphates of Na^+ and Mg^{2+} ions

(d) chlorides of Ca^{2+} and Mg^{2+} ions

Hints: sulphates of Na^+ and Mg^{2+} ions are responsible for permanent hardness.

Answer: (c)

144. Hydathodes are:

(a) hormones secreting glands

(b) water secreting glands

(c) nectar secreting glands

(d) enzymes secreting glands

Hints: Hydathodes are the pores through which water can exude through a process called guttation.

Answer: (b)

145. In RLC series circuit when the frequency of AC source is very low, the circuit is a / an

(a) resistive circuit (b) capacitive circuit

(c) inductive circuit (d) resonant circuit

Hints: $X_c = 1/2\pi fC \rightarrow X_c \propto 1/f$
Less frequency more capacitive nature.

Answer: (b)

146. Which of the following makes the motion of a perpetual motion machine a physical impossibility?

(a) first law of thermodynamics

(b) second law of thermodynamics

(c) third law of thermodynamics

(d) None of these

Answer: (b)

147. A punnett square is used to determine the:

(a) result of mitosis (b) result of meiosis

(c) actual outcome of a cross

(d) probable outcome of cross

Answer: (d)

148. The process of combining low frequency signal with high frequency carries waves is called:

(a) rectification (b) amplification

(c) modulation (d) magnification

Answer: (d)

149. A buffer solution containing H_2CO_3 and NaHCO_3 is to be prepared to maintain a pH of 7.00 what must be the ratio $\frac{[\text{NaHCO}_3]}{[\text{H}_2\text{CO}_3]}$ in

order to realize such a pH if K_a of carbonic acid is 4.3×10^{-7} ?

(a) 43 (b) 48 (c) 0.43 (d) 4.3

Hints: As handerson hazel black equation is

$\text{pH} = \text{p}K_a + \log \left[\frac{[\text{NaHCO}_3]}{[\text{H}_2\text{CO}_3]} \right]$ As $K_a =$

4.3×10^{-7} & $\text{pH} = 7 - \log K_a = -\log$

$[4.3 \times 10^{-7}] = 6.33$, $\text{p}K_a = 6.33$,

$7 = 6.33 + \log \left[\frac{[\text{NaHCO}_3]}{[\text{H}_2\text{CO}_3]} \right] \rightarrow \log$

$\left[\frac{[\text{NaHCO}_3]}{[\text{H}_2\text{CO}_3]} \right] = 7 - 6.33 = 0.633$

Taking antilog: $\left[\frac{[\text{NaHCO}_3]}{[\text{H}_2\text{CO}_3]} \right] = 0.43$

Answer: (c)

150. The number of chromosomes of tobacco plant are:

(a) 43 (b) 1.29 (c) 0.43 (d) 24

Answer: (b)

151. 'Professional' and '_____' are antonyms.

(a) unemployed (b) entrepreneur

(c) amateur (d) capitalist

Hints: The opposite of professional is Amateur.

Answer: (c)

152. The ratio of volumetric strain to volumetric stress is called:

(a) compressibility (b) young's



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(a) one curie (b) one Becquerel
(c) one half life (d) all of these
Answer: (b)

196. What is the most important source of water pollution in Pakistan.

(a) industries (b) transportation
(c) mining industry
(d) agricultural and municipal wastage

Hints: Agricultural wastage including all types of pesticides viz insecticides, rodenticides, etc and various kinds of metabolite etc. Municipal wastage include home & Hospital wastage etc
Answer: (d)

197. The number of nitrogenous base common in both D.N.A and R.N.A are

(a) two (b) three (c) five (d) four

Hints: Three nitrogenous bases i. e. A, C & G.

(Adenine, Cytosine & Guanine) there are five kinds of bases viz. Adenine, Guanine, Cytosine, thymine & Uracil of which the first three are common, both in DNA & RNA, whereas T is 4th one DNA & U RNA

Answer: (b)

198. Fission reaction can be produced in by : ${}_{92}\text{U}^{238}$

(a) fast neutrons (b) slow neutrons
(c) thermal neutrons (d) all of these
Answer: (a)

199. In which of the following atoms, the 1s orbital is the smallest in size?

(a) bromine (b) chlorine (c) fluorine
(d) iodine

Answer: (c)

200. The genetic potential for one type of cell from a multi-cellular organism to generate a whole new organism is called:

(a) Unipotent (b) multipotent
(c) totipotent (d) pluripotent

Answer: (c)

Since 2016



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MEDICAL PAPER 2010

S.No	MCQs	(c) Substitute	(d) Practical
1.	Which of the following gives a positive test with felling solution? (a) Cu (I) oxide (b) Ethanal (c) Acetone (d) Phenol	8.	The gate which has one input and one output is: (a) Not gate (b) And gate (c) NAND gate (d) OR gate
2.	The SI unit of inductance is: (a) Weber (b) Weber meter ⁻² (c) Tesla (d) Henry	9.	The shape of polio virus is: (a) Polyhedral shape (b) Bad shape (c) Tadpole shape (d) Golf ball shape
3.	Which of the following has four chambered heart? (a) Lizard (b) Turtle (c) Crocodile (d) Frog	10.	The emission or absorption of energy by an atom is represented by $\Delta E =$ (a) $h\nu$ (b) $\frac{1}{2}mv^2$ (c) Mgh (d) Mc^2
4.	A metallic oxide when added to water would most likely form a(n) (a) Base (b) Acid (c) Salt (d) Basic anhydride	11.	The attachment of two sub units of ribosomes on a single mRNA is controlled by: (a) Mg ⁺ ions (b) Na ⁻ ions (c) Proteins (d) Ribosomal RNA
5.	Mother is _____ the baby dinner in the kitchen. (a) Preparing (b) Prepared (c) Preparation (d) preparatory	12.	In transistor the emitter to base function is: (a) Reversed biased (b) Forward biased (c) Neutral (d) None of these
6.	In alternating current the average value of current in cycle is; (a) Zero (b) Constant (c) Positive (d) Maximum	13.	An enzyme in gastric juice of many infant mammals that precipitates milk protein is: (a) Rennin (b) Pepsinogen (c) Gastrin (d) Renin
7.	MAKESHIFT is closest in meaning to: (a) Impulsive (b) Revolving	14.	Swelling of dead dodos in water is



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- (c) Wavelength has no effect
(d) It depends only on design of microscope not on light
-
30. An individual has an additional sex chromosome which syndrome does it refer to?
(a) Down's syndrome
(b) Turner's syndrome
(c) Jacobs syndrome
(d) Klinefelter's syndrome
-
31. HIV is also known as:
(a) AIDS
(b) HAV
(c) HTLV
(d) HBV
-
32. Elements not found in nature synthesized in nuclear reactions and involving completion of 51 orbital are known as.
(a) Lanthanides (b) Transition elements
(c) Rate gases (d) Actinides
-
33. FORESHADOW is closest in meaning to;
(a) Dread
(b) Disguise
(c) Endanger
(d) Indicate
-
34. The rest mass energy of electron is:
(a) 0.51 joule
(b) 1.02 joule
(c) 9.11×10^{-32} joule
(d) 8.2×10^{-14} joule
-
35. A charge moving at a relativistic speed has a speed
(a) Equal to speed of light
(b) Greater than speed of light
(c) Comparable to the speed of light
(d) None of these
-
36. smaller the animal
(a) More the rate of respiration
(b) Less the rate of respiration
(c) Rate of respiration has nothing to do with size of animal
(d) None of these
-
37. The Aruba principle governs.
(a) Coulomb potential
(b) Vapour pressure
(c) Electronic configuration
(d) Entropy
-
38. The dimensions of Planck constant are;
(a) $[MLT^{-2}]$
(b) $[ML^2T^{-1}]$
(c) $[MLT^{-3}]$
(d) $[ML^2T^{-2}]$
-
39. A _____ is a person who is dissatisfied and inclined to rebel.
(a) Delinquent (b) Revolutionary
(c) Pessimist (d) Nonconformist
-
40. The effect of the decrease in pressure with the increase in speed of the fluid in horizontal tube gives that.
(a) Torrielli's effect (b) Bernoulli's effect
(c) Venturi's effect (d) Doppler effect
-
41. Which germinal layer develops in digestive system?
(a) Ectoderm (b) Mesoderm
(c) Epidermis (d) Endoderm
-
42. Which one of the following compounds has a sharp melting point?
(a) Pure $C_6H_{12}O_6$
(b) Impure NaCl
(c) Glass
(d) Mixture of above two
-
43. How much will be the length of a simple pendulum if its time period is one second?



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- (a) 2.5 m (b) 0.25 m
(c) 25 m (d) 0.025 m
44. The center of porphyrine in the head region of hemoglobin is occupied by
(a) Iron (b) Magnesium
(c) Sodium (d) Potassium
45. To distinguish among primary secondary and tertiary alcohol one would use which of the following method:
(a) Witting reaction (b) Tollen test
(c) Lucas test (d) Ninhydrin test
46. which of the following functional groups in NOT orthopara directing and activating
(a) R (b) OH (c) COR (d) NH₂
47. The physical quantity which produces angular acceleration in body.
(a) Force (b) Centripetal force
(c) Impulse (d) Torque
48. Microspore furfur causes:
(a) Athletes foot (b) Ring worm
(c) Dandruff (d) Ergot
49. For the exothermic reaction
 $2\text{NO}(g) + \text{N}_2(g) + \text{O}_2(g)$
(a) Is independent of temperature
(b) Increases as temperature increases
(c) Decreases as temperature increases
(d) Varies with addition of N₂ and O₂
50. Which of the following is an example of vector product of two vectors?
(a) Linear momentum
(b) Angular momentum
(c) Force
(d) Electric flux
51. First crystalline hormone is:
(a) Thyroxine (b) Noradrenalin
(c) Adrenalin (d) All of the above
52. If $\vec{A} = 2i + j + 2k$
then its magnitude is:
(a) 9 (b) 5 (c) 3 (d) 1
53. limbic system in forebrain consists of:
(a) Hypothalamus (b) Hippocampus
(c) Amygdala (d) All of the above
54. Which one of the following diseases is due to point mutation?
(a) Down syndrome
(b) Klinefelter syndrome
(c) Phenylketonuria
(d) Turner syndrome
55. Which of the following is NOT a member of transition metal?
(a) Scandium family (b) Iron family
(c) Titanium family (d) Beryllium family
56. The amount of heat energy required to raise temperature of a body through 1K is called:
(a) Specific heat (b) Molar specific heat
(c) Heat capacity (d) Heat of vaporization
57. opening of flower buds and leaf buds is called;
(a) Epinasty (b) Thermonasty
(c) Photonasty (d) Seismonasty
58. Natural chlorine occurs as a mixture of isotopes if a mixture contains 75% Cl³⁵ and 25% Cl³⁷ what will be its correct atomic weight?
(a) 35.50
(b) 34.50
(c) 72.00
(d) 70.00



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- (a) Magnetic flux
(b) Magnetic flux density
(c) Magnetic permeability
(d) None of these
-
125. The charge of electron was determined by the effect of electric field on rate of fall of oil droplets under gravity this was done by:
(a) JJ Thomson (b) E Rutherford
(c) R Milliken (d) WC Roentgen
-
126. The force on electron in electric field of 10^8 NC⁻¹
(a) 1.6×10^{-4}
(b) 1.6×10^{-8}
(c) 1.6×10^{-10}
(d) 1.6×10^{-11}
-
127. Book lungs may be found in which of the following
(a) Clam worm
(b) Spider
(c) Silver fish
(d) Leech
-
128. The current produced in coil due to induced emf depends upon.
(a) Area of the coil
(b) Shape of coil
(c) Turns of coil
(d) Strength of magnetic field in which the coil rotates
-
129. All cell membranes are composed of:
(a) Proteins
(b) Lipids
(c) Lipo protein
(d) Cellulose
-
130. Metals are good conductors of electricity because they contain:
(a) Large number of freely mobile electrons
(b) Large number of bound electrons
(c) Small number of free electrons
(d) Small number of bound electrons
-
131. Who stated this hypothesis?
Mosquitoes are involved in the spread of malaria.
(a) Ronald
(b) AFA king
(c) Laveran
(d) Aristotle
-
132. The simplest oxygen producing organisms are:
(a) Photosynthetic bacteria
(b) Autotrophic bacteria
(c) Cyanobacteria
(d) Chlamydomonas
-
133. Which is the first step taken when metals are obtained from sulphide are?
(a) Smelting
(b) Reasing
(c) Reduction
(d) Refining
-
134. The life time of an ordinary excited state is:
(a) 10^{-35} sec
(b) 10^{-8} sec
(c) 10^{-3} sec
(d) 0.1 sec
-
135. Hunger centers are located in;
(a) Hypothalamus (b) Cerebellum
(c) Medulla (d) Mid brain
-
136. Which of the following is not a polmer?
(a) Plastic (b) Petroleum
(c) Starch (d) Natural rubber
-
137. The device used for detection of isotopes is
(a) Mass spectrometer (b) Cyclotron
(c) Betatron (d) Reactor
-
138. Do you have ___ difficulty with the language?



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- (a) Any (b) Some (c) Every (d) Many
139. The best shield against x-rays to absorb it is
(a) Lead (b) Steel (c) Iron (d) Copper
140. Heart muscles are called:
(a) Smooth muscles (b) Myogenic muscles
(c) Striated muscles (d) Skeletal muscles
141. A nucleophile is
(a) Lewis acid (b) Bronsted acid
(c) Bronsted base (d) Lewis base
142. The minimum number of unequal forces whose vector sum can be zero are
(a) One (b) Two (c) Three (d) Four
143. If an organism adopts saprophytic mode of nutrition during part of its life the organism is called.
(a) Obligate parasite
(b) Facultative parasite
(c) Obligate saprophyte
(d) Facultative saprophyte
144. Which of the following ions can act as a bronsted acid and base in water?
(a) HCO^-
(b) CN^-
(c) NO_3^-
(d) PO_4^{3-}
145. Here are your shoes, I ____ them
(a) Just clean (b) Just cleaned
(c) Have just cleaned (d) Have just cleaned
146. Which of the following bonds (.....) is the least polar?
(a) B....Cl
(b) C....Cl
(c) C....I
(d) C....Br
147. The dimensions of the gravitational constant are:
(a) $[\text{M}^2\text{L}^2\text{T}]$
(b) $[\text{M}^{-1}\text{L}^3\text{T}^{-2}]$
(c) $[\text{M}^2\text{L}^{-2}\text{T}^{-2}]$
(d) $[\text{ML}^{-2}\text{T}^{-1}]$
148. During the development of chick peripheral part of the blastoderm lies unseparated from the yolk and forms:
(a) Area pellucid (b) Area opaca
(c) Notochord (d) Primitive streak
149. In which of the following a covalent bond is not likely to exist?
(a) Br (b) SiF (c) CaO (d) SeH_2
150. The stranger ____ the little girl with some sweets.
(a) Deceived
(b) Attracted
(c) Enticed
(d) Praised
151. The wave velocity in any medium depends upon
(a) Elasticity (b) Density
(c) Homogeneity (d) All of the above
152. Phloem tissues are composed of:
(a) Trachelds (b) Trachea
(c) Colleen chyma (d) Sieve tubes
153. Monotropa is a
(a) Total parasite (b) Total saprophyte
(c) Partial parasite (d) Partial saprophyte
154. Which of the following oxides has the most basic character?
(a) Na_2O
(b) MgO
(c) Al_2O_3

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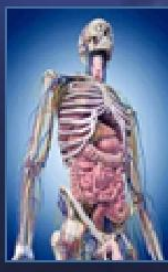
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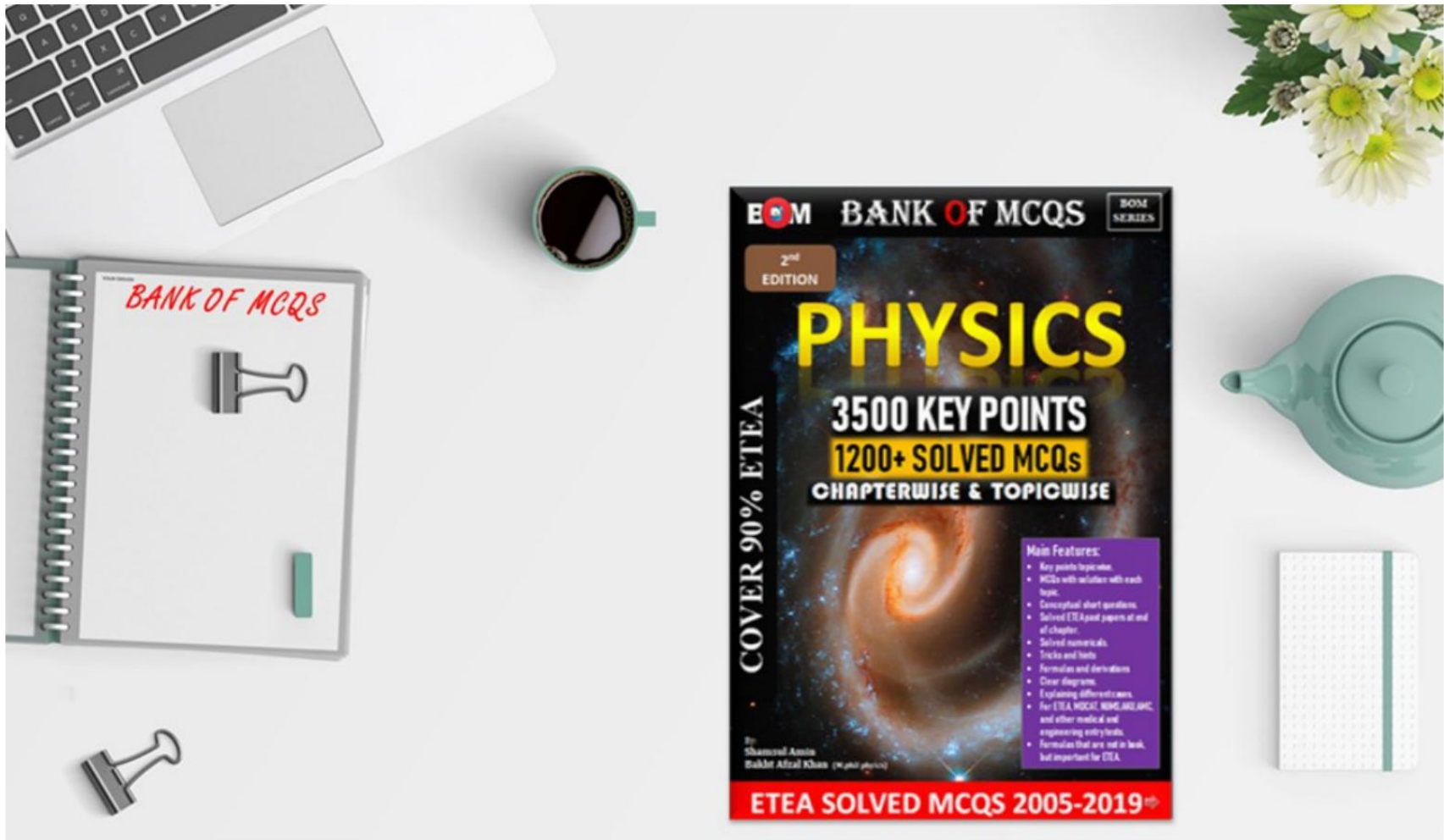


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- work in one second its power will be.
(a) 550 watt (b) 746 watt
(c) 746 horse power (d) 550 horse power
28. $\lim_{x \rightarrow 1} \frac{\sqrt{1+x}-1}{x} \times \lim_{x \rightarrow 1} x^2$
(a) 0
(b) $\frac{1}{2}$
(c) ∞
(d) 2
29. The number of orbitals in 'M' shell of an atom is;
(a) 1 (b) 4 (c) 5 (d) 9
30. Which of the following type of force can do no work?
(a) Elastic force
(b) Frictional force
(c) Gravitational force
(d) Centripetal force
31. The escape velocity for a ball of mass 0.25 kg will be:
(a) 44 km sec⁻¹
(b) 11 km sec⁻¹
(c) 2.75 m sec⁻¹
(d) 0.25 m sec⁻¹
32. The kth term of the series $1^2+(1^2+2^2)+(1^2+2^2+3^2)+\dots$ is:
(a) K^2
(b) $\frac{k(k+1)(2k+1)}{6}$
(c) $\frac{k(k+1)}{4}$
(d) None of the above
33. The librarian can provide you a/an _____ edition of the book.
(a) Abridged (b) Summarized
(c) Abbreviated (d) Shortened
34. At what temperature both Fahrenheit and Celsius scales coincide?
(a) 40°C (b) -30°C (c) 32°C (d) -40°C
35. As the pressure of medium increases the speed of sound in medium.
(a) Increases (b) Decreases
(c) Remains constant (d) None of these
36. $\sum_{j=1}^{\infty} \frac{1}{2^j} =$
(a) 1 (b) ∞ (c) $\frac{1}{2}$ (d) $\frac{1}{2n}$
37. Which of the following most closely represents an ideal gas?
(a) He (b) H₂ (c) CO₂ (d) Ne
38. The motion of the source of sound with respect to stationary listener causes a change in:
(a) Intensity of sound
(b) Frequency of sound
(c) Velocity of sound
(d) None of these
39. Equation of latus rectum of the parabola $Y^2=4ax$ is:
(a) $x=a$ (b) $y=0$ (c) $x+a=0$ (d) $x=0$
40. Which of the following points lie on the circle $x^2+y^2-13x-5y+16=0$?
(a) (1,1)
(b) (3,-1)
(c) (0,0)
(d) Both A & B
41. BRILLIANT is closest in meaning to:
(a) Sparkling
(b) Glorious
(c) Talented
(d) Showy
42. During the formation of a chemical bond between two atoms the forces which are operative are:
(a) both forces of attraction and repulsion
(b) either force of attraction nor



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- (a) propane and methyl grignard
(b) Butly Grignard and acetaldehyde
(c) Crotonabldehyde and ethyl grignard
(d) ethyl Grignard and propionaldehyde
-
73. Radioactive materials can be identified by measuring their:
(a) Density
(b) Hardness
(c) Buctility
(d) Half life
-
74. The reaction of alkyl halide with ammonia is calle(d)
(a) Wurtz reaction
(b) Hoffman reaction
(c) Flanklands reaction
(d) Friedal craft reaction
-
75. Time taken by light to reach from sun to earth is:
(a) 10 min 20sec (b) 8 min 20sec
(c) 5 min 20sec (d) Infinity
-
76. The Function $f:\sqrt{x}$:is called:
(a) Identity function
(b) Linear function
(c) Square root functioin
(d) None of the abov
-
77. The building was completely ___ by the fire.
(a) Obliternated (b) Demolished
(c) Annihilated (d) Destroyed
-
78. Positron was discovered by
(a) Compton
(b) Anderson
(c) Einstein
(d) Dirac
-
79. $(5-4i)-1$ can be written in the form of $x + i$
y as:
(a) $5/41-4/41i$
(b) $5/41+4/41i$
(c) $5/9+4/9i$
(d) $5/9-4/9i$
-
80. The rate of reaction is defined as
(a) Dc/dt
(b) Dt/dc
(c) $dc.dt$
(d) $(dc)^2/(dt)^2$
-
81. The life time of an atom in the meta stable state is:
(a) 10^{-8} sec
(b) 10^{-15} sec
(c) 10^{-3} sec
(d) 10^{-2} sec
-
82. $\int \sin Kx dx =$
(a) $\sin kx +c$
(b) $\cos kx +c$
(c) $C \cdot \frac{\cos kx+c}{k}$
(d) None of the above
-
83. Have you made ___ your mind about acting in the play?
(a) Out (b) Over (c) Up (d) On
-
84. The oxidation number of nitrogen in the nitrite ion NO_2^- is
(a) +1 (b) +2 (c) +3 (d) +1
-
85. A precise measurement is one which has:
(a) Less uncertainty
(b) Maximum precision
(c) Absolute precision
(d) None of these
-
86. Which of the following is not the binary operation in N.
(a) + (b) - (c) * (d) None these
-
87. There are many ___ organizations here which need voluntary workers.
(a) Sympathetic (b) Charitable
(c) Generous (d) Sociable
-
88. Which of the following is not



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104. I can't make ___ what he has written
(a) Out (b) Up (c) After (d) For
105. The depletion region has:
(a) Electrons only
(b) Holes only
(c) Neither holes nor electrons
(d) Both holes and electrons
106. $\frac{d}{dx}a^x =$
(a) ax
(b) $a^x \ln e^c$
(c) $\frac{ax}{\ln a}$
(d) $a^x \ln a$
107. During the electrolysis of a CuCl_2 solution which of the following reaction is possible at the anode?
(a) $2\text{H}_2\text{O} = \text{O}_2 + 4\text{H}^+ + 4\text{e}^- = \text{Cu}$
(b) $\text{Cu}^{++} + 2\text{e}^- = \text{Cu}$
(c) $2\text{H}^+ + 2\text{e}^- = \text{H}_2$
(d) $\text{Cu} = \text{Cu}^{++} + 2\text{e}^-$
108. The velocity of earth satellite can be measured from the change in frequency or radio waves by using.
(a) Doppler effect (b) Beats
(c) Interference (d) Diffraction
109. The resistances of 3 ohm 4 ohm and 5 ohm are connected in parallel if the potential difference across 3 ohm resistor be 12 volt then the potential difference across 4 ohm and 5 ohm will be:
(a) 3volt (b) 6volt (c) 9 volt (d) 12 volt
110. $\frac{d}{dx} \cos x \cdot \sec x +$
(a) 1
(b) 0
(c) $\sec^2 x$
(d) None of above
111. Which of the following compounds when warmed with Fehlings solution gives a red precipitate?
(a) Methanol
(b) Ethanol
(c) Aldehyde
(d) Ketone
112. The combination of NOT and and NOR gate is called
(a) XOR gate (b) NAND gate
(c) XNOR gate (d) None of the above
113. -----
114. I am much obliged to you for your _____ assistance.
(a) Valuable
(b) Value
(c) Valuation
(d) Valueless
115. Which of the following is responsible for an increase in the entropy of a gaseous system?
(a) Increase in heating
(b) Cooling the system
(c) Heating followed by cooling
(d) Compression at specific temperature
116. Which of the following particle can move with the speed of light?
(a) Electron
(b) Positron
(c) Proton
(d) Photon
117. Let $G = \{-1, 1, -i, i\}$ then $(G, *)$ is
(a) Group (b) Not a group
(c) Abelian group (d) None of the above
118. Who postulated the following equation for energy emission when an electron drops from state n_2 to n_1 ?
(a) Einstein
(b) Bohr



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189. When salt of sodium such as NaCl is heated in a flame:
(a) proton will leave the nucleus of Na
(b) α particles will be emitted
(c) electron will move to higher orbit
(d) Na atoms will react with one another
190. Which of the following elements mixes safely with hydrogen in dark but reacts rather explosively with hydrogen in light?
(a) Nitrogen (b) Phosphorus
(c) Chlorine (d) Potassium
191. Which one is not the unit of magnetic induction?
(a) Tesla
(b) Weber
(c) Weber meter⁻²
(d) Nm⁻¹A⁻¹
192. The military coup in the county has brought an end to ___ rule by the emperor.
(a) Tyrant (b) democratic rule
(c) Eclipse (d) Lasting
193. Which of the following compounds has bonds formed by an overlap of sp and p orbitals?
(a) BF₃
(b) NH₃
(c) BeCl₂
(d) CH₄
194. If an atom exists in the excited state $n = 4$ then maximum number of spectral lines emitted will be.
(a) Three (b) Four (c) Five (d) Six
195. -----
196. Which of the following reagents may not be used for oxidation of aldehyde and ketones to organic acids?
(a) KMnO₄
(b) K₂Cr₂O₇
(c) LiAlH₄
(d) KOCl & H₂SO₄
197. To calculate the momentum of an electron which of the formulas given below would be the most appropriate?
(a) $h\nu_2$
(b) mev
(c) hv
(d) reB
198. The penetrating power of x rays depends upon.
(a) Filament current
(b) operating voltage
(c) The nature of the filament
(d) none of these
199. Let R be a relation from A into B then
(a) Dom R \square A (b) Range R \square A
(c) Dom R \square B (d) Dom R \square B
200. What is the right configuration of an element with 24 electrons.
(a) $1s^2 2s^2 2p^6 3p^6 3d^6$
(b) $1s^2 2s^2 3s^2 2p^6 3p^6 4s^2 3d^4$
(c) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$
(d) $1S^2 2S^2 2p^6 3S^2 4S^1 3d^5$



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- (a) Hematite (b) Limonite
(c) Siderite (d) Magnetite
-
171. The scientist who was awarded noble prize for explaining photoelectric effect
(a) Max Planck (b) Compton
(c) Louise (d) Einstein
-
172. Salmonella typhus is a
(a) Crocus bacterium
(b) Bacillus bacterium
(c) Spirals bacterium
(d) Nitrobacterium
-
173. Which is the correct formula of ammonium carbonate?
(a) H_2NCONH_2
(b) $\text{NH}_4\text{COONH}_4$
(c) $\text{H}_2\text{NCOONH}_2$
(d) $\text{NH}_2\text{COONH}_4$
-
174. The energy of electron in the excited state $n=4$ in hydrogen atom is:
(a) -13.6eV
(b) -3.4eV
(c) -0.85eV
(d) -1.5eV
-
175. Increased production of RBCs is called:
(a) Leukemia (b) Polycythemia
(c) Edema (d) Anemia
-
176. Carboxylic acid forms alcohol in presence of LiAlH_4 , and the process is:
(a) Reduction (b) Oxidation
(c) Hydrolysis (d) None of above
-
177. Rhythmicity of respiration is maintained by.
(a) The cardiac center
(b) Ventilation center
(c) Pons
(d) Carotid sinus
-
178. Which of the following is NOT considered to be an oxidizing agent?
(a) MnO_2
(b) Cl_2
(c) NaOH
(d) Na_2O_2
-
179. The instrument that is used to determine the weight of proton as well as positive ion and is capable of recording its result as photograph is called:
(a) Mass spectroscope
(b) Atomic spectroscope
(c) Spectrophotographic analyzer
(d) Spectrophotometer
-
180. He has ___ his pen and is buying another one.
(a) Lose (b) Lost (c) Loser (d) Loss
-
181. In CRO the time base circuit is connected to:
(a) Vertical plates
(b) Electron gun
(c) Horizontal plates
(d) Fluorescent screen
-
182. Aestivation is also known as:
(a) Spring sleep (b) Winter sleep
(c) Autumn sleep (d) Summer sleep
-
183. Displacement reaction that proceeds by the SN_2 mechanism are most successful with compounds that are:
(a) Neopentyl system
(b) Tertiary compound with no branch
(c) Secondary halides
(d) Primary compound with no branch at B – carbon
-
184. A wire of length 10 cm lying normal to magnetic field of 0.5T is experiencing a force of 5N. The

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ENTRY TEST**

By:
Shamsul Amin
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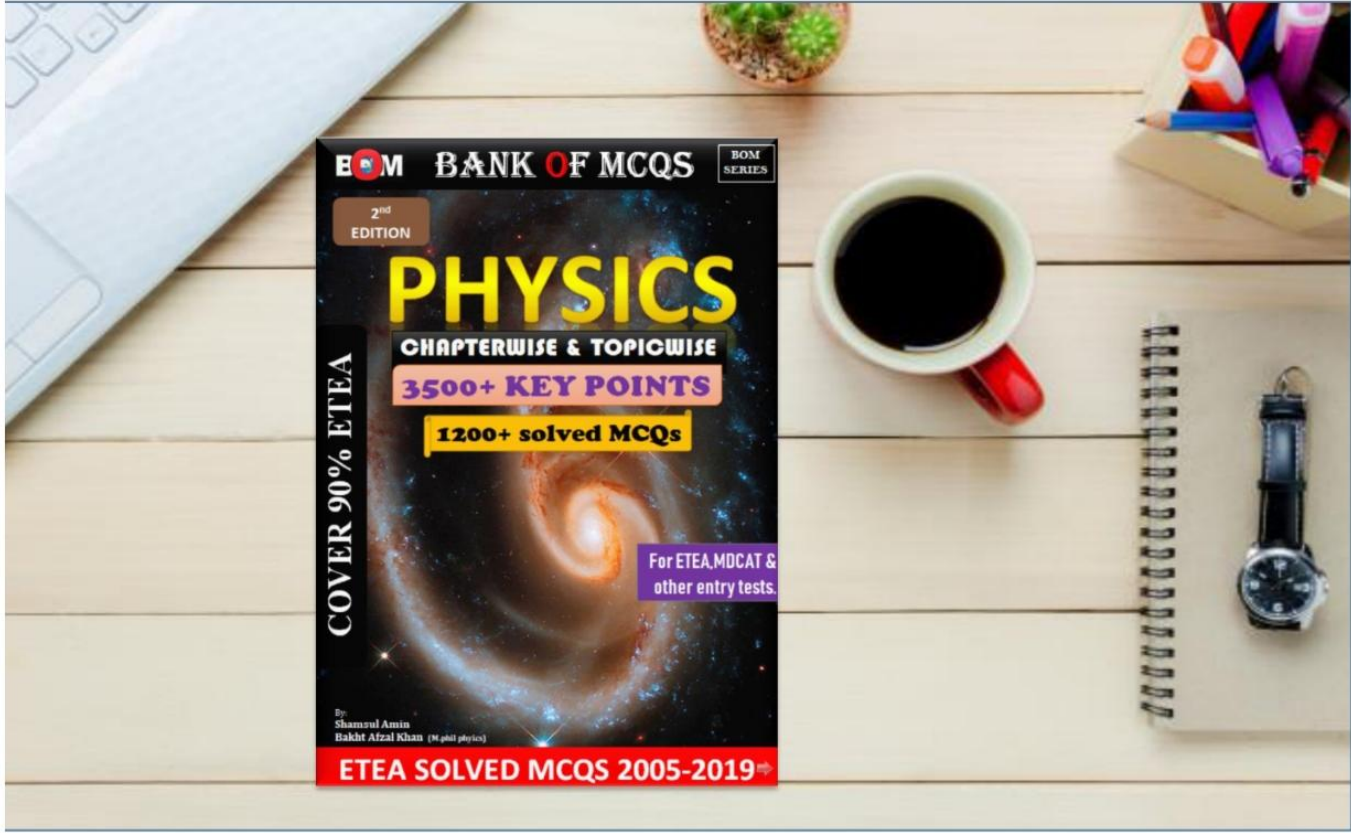
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By: Shamsul Amin

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- (a) R
(b) $f(x) > 1$
(c) $f(x) \geq 1$
(d) ∞
-
133. The log of rate constant of a reaction is:
(a) directly proportional to temperature change
(b) Not effected by temperature change
(c) inversely proportional to temperature
(d) effected by activation energy not by temperature
-
134. A wire of uniform cross section A length L and resistance R is cut into equal pieces The resistivity of each piece is:
(a) Halved (b) Doubled
(c) One fourth (d) Remains constant
-
135. The lines represented by $x^2 + 5xy + y^2 = 0$ are
(a) Coincident
(b) Perpendicular
(c) Imaginary
(d) None of the above
-
136. Sarwar ___ collect antiques but now he has other pastimes
(a) Used to (b) Was used to
(c) Used to be (d) Using to
-
137. 10ml of 1.5 M NaOH solution is neutralized by 20ml of a M HCl solution. The value of a will be:
(a) 1.0 (b) 0.75 (c) 0.5 (d) 0.25
-
138. The heat energy dissipated by 40 watt Bulb in one hour is
(a) 1440 joules (b) 14400 joules
(c) 144000 joules (d) 1440000 joules
-
139. In the expansion $(1+x)^n$ if n is rational then the number of terms are provided $|x| < 1$:
(a) n+1 (b) n-1 (c) finite (d) Infinite
-
140. The solubility product values for the following salts are given
Cus = 1.0×10^{-10}
Hgs = 1.0×10^{-15}
Pbs = 1.0×10^{-20}
(a) Hgs will ppt first
(b) Pbs will ppt first
(c) Cus will ppt first
(d) All three will ppt simultaneously
-
141. The magnetic induction at a distance of 0.1m from a straight wire through which 10A current flow is:
(a) $0.2 \times 10^{-5} T$
(b) $2 \times 10^{-5} T$
(c) $0.02 \times 10^{-5} T$
(d) $0.002 \times 10^{-5} T$
-
142. The minimum number of unequal forces whose vector sum can be zero are:
(a) One (b) Two (c) Three (d) Four
-
143. Self-induction of the coil depends upon:
(a) Area of coil (b) Number of turns
(c) Length of coil (d) All of these factors
-
144. When coal is heated (500-1000°C) in the absence of air the process is called
(a) Distillation (b) Carbonization
(c) Cracking (d) Reforming
-
145. Which of the following will NOT be deflected when moving in magnetic field?
(a) α -rays (b) β -ray (c) γ -ray (d)



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- None
146. $\frac{d}{dx} \frac{1}{g(x)}$ when $g(x) \neq 0$ is :
(a) -g
(b) $\frac{-g(x)}{[g(x)]}$
(c) 0
(d) None
147. If a circle has its center on the origin then it passes through
(a) X axis (b) Y axis
(c) Both A and B (d) 0 electrons
148. An orbital may never be occupied by:
(a) 1 electron (b) 2 electrons
(c) 3 electrons (d) 0 electron
149. In which of the following a covalent bond is not likely to exist?
(a) Br (b) SiF₄
(c) CaO (d) CH₄
150. Propagation of light in an optical fibre
(a) the light should be polarized
(b) the light should be totally confined
(c) the light should be dispersed
(d) the light should travel along straight line
151. ${}^n C_r + {}^n C_{r-1} =$
(a) ${}^n C_r$
(b) ${}^n P_r$
(c) ${}^{n+1} C_{r+1}$
(d) ${}^{n+1} C_r$
152. The least accurate of the volumetric measuring devices is the
(a) Pipet
(b) Burret
(c) Volumetric flask
(d) Graduated cylinder
153. The ability of an instrument to reveal the minor details of an object under examination is its:
(a) Linear magnification
(b) Angular magnification
(c) Resolving power
(d) None of these
154. Glass is an example of an amorphous solid which can be characterized as:
(a) A malleable solid
(b) A molecular solid
(c) Crystal like in structure
(d) Very viscous fluid
155. The heating and cooking of food evenly by micro wave oven is an example of:
(a) Resonance (b) Specific heat
(c) Damped oscillation (d) None of these
156. $\frac{d}{dx} \log, \sin x =$
(a) $\tan x$
(b) $\operatorname{Cosec} x$
(c) $\cos x$
(d) $\cot x$
157. There is sufficient _____ to charge the man with fraud:
(a) Data
(b) Information
(c) Evidence
(d) Clue
158. What causes a sharp increase in the energy with a further decrease in the distance between atoms A and B after bond formation?
(a) Attraction of atoms A and B
(b) Repulsion of nuclei of A and B and electrons of A and B
(c) Attraction of nucleus of A and electron of B
(d) Bond formation



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174. The colour of sky is blue due to:
(a) Interference of light
(b) Diffraction of light
(c) Polarization of light
(d) Scattering of light
-
175. If $f(x) = x^1$ and $g(x) = x^3$ then:
(a) $f \circ g < g \circ f$ (b) $f \circ g \neq g \circ f$
(c) $f \circ g = g \circ f$ (d) $f \circ g > g \circ f$
-
176. Most people are afraid to go ___ the beaten track.
(a) From (b) To (c) off (d) Against
-
177. Four balloons were filled with different gases. One of the balloons flew the highest the gas filled in it was:
(a) Oxygen
(b) Nitrogen
(c) Helium
(d) Hydrogen
-
178. During a redox reaction an oxidizing agent:
(a) Gains electrons (b) Is hydrolyzed
(c) Is oxidized (d) Loses electrons
-
179. If A and B are any two complementary events in a sample space s then $P(A)+P(B)-P(A \cap B) =$
(a) $P(A \cap B)$
(b) $P(A-B)$
(c) $P(A \cup B)$
(d) $P(A \cup B)$
-
180. He has ___ his pen and is buying another one.
(a) Lose (b) Lost (c) Loser (d) Loss
-
181. A two meter high tank is full of water a hole is made in the middle of the tank the speed of efflux will be:
(a) 4.4 m sec^{-1}
(b) 6.2 m sec^{-1}
(c) 5.1 m sec^{-1}
(d) 4.9 m sec^{-1}
-
182. $\sin^2 x + \cos^2 x = 1$ is true for:
(a) One value of x (b) Some values of x
(c) No value of x (d) All values of x
-
183. The potential difference between two points is one volt. The work done in moving one coulomb of charge from one point to other point is:
(a) One erg (b) One foot pound
(c) One electron volt (d) One joule
-
184. In the fraction $\frac{1}{(x^2+1)(x^4-1)}$ total, different real factors in the denominators are:
(a) 6 (b) 3 (c) 4 (d) 5
-
185. Which of the following carbonium ion is more stable?
(a) R_3C^+
(b) R_2^+CH
(c) RC^+H_2
(d) CH_3^+
-
186. Which of the salts below will produce an alkaline solution when dissolved in water?
(a) Na_2CO_3
(b) $NaCl$
(c) $NaNO_3$
(d) Na_2SO_4
-
187. The capacitor which charges and discharges quickly will have
(a) Small value of RC
(b) Large value of RC
(c) Large value of time constant
(d) None of these
-
188. The inverse of $y = 2X$ is:
(a) $y = \log_2 x$ (b) $Y = 2-x$
(c) $Y = -2x$ (d) None of above



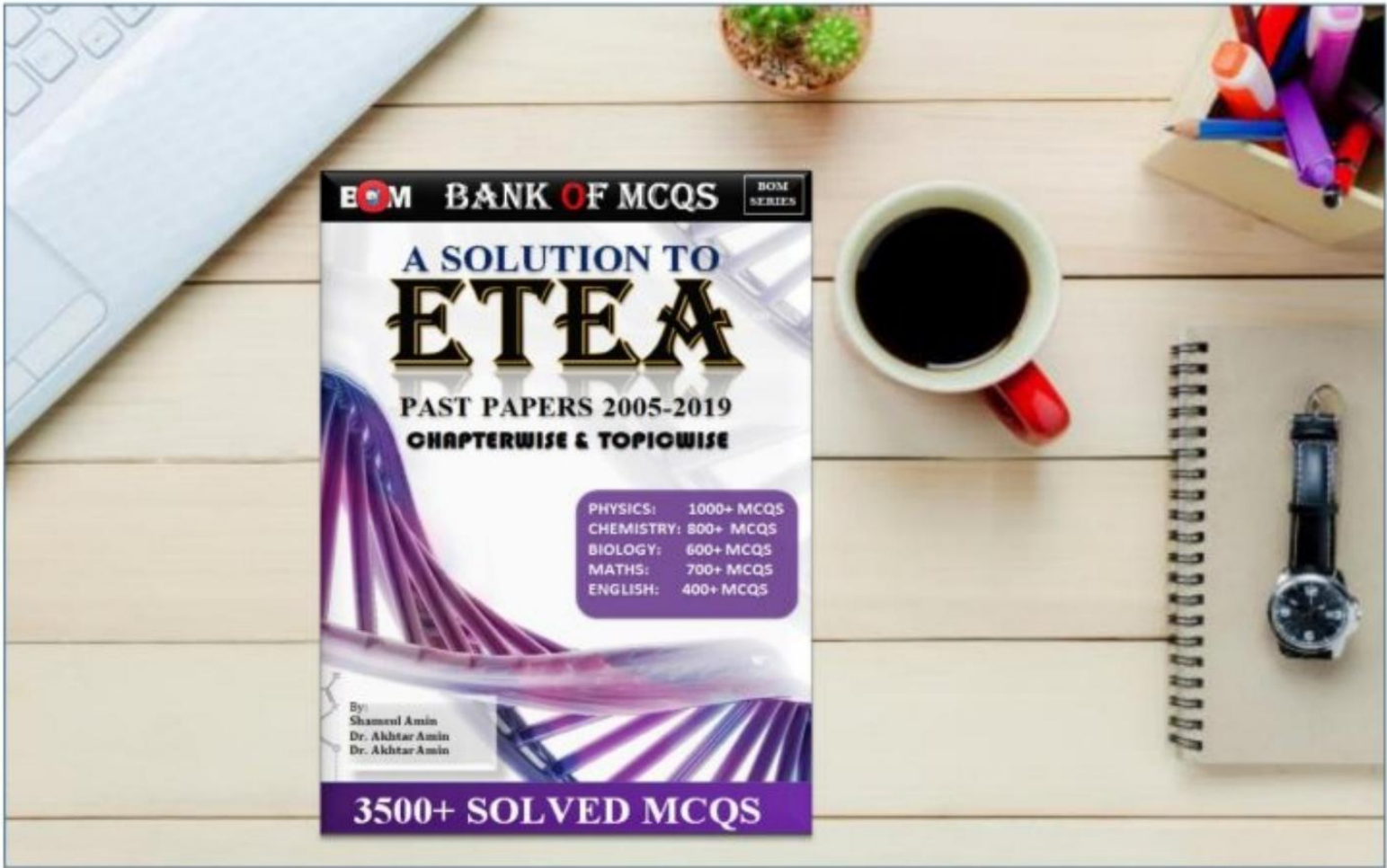
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- (d) H_2CO_3
-
113. If a tunnel is bored through the centre of the earth and a stone is dropped into it then the:
- (a) stone will stop at the center of the earth
 - (b) stone will move out for other side of the tunnel
 - (c) stone will perform simple harmonic motion
 - (d) none of these
-
114. Tissue plasminogen activator (TPA) is used for:
- (a) Treating anaemia
 - (b) Bonemarrow transplant
 - (c) Dissolving blood clot
 - (d) Treatment of cancer
-
115. A gas at STP contains only 6.023×10^{23} atoms and is monoatomic it will occupy
- (a) 1.2L (b) 22.4L (c) 30.5L (d) 44.8L
-
116. Gamma rays have high penetrating power than α & β ray due to:
- (a) No charge (b) Non material nature
 - (c) Small size (d) Lighter particles
-
117. The heat engine operating in reverse is called
- (a) Electric generator (b) Refrigerator
 - (c) Cannot engine (d) Electric motor
-
118. Which of the following is present in the centre of Porpyrine ring of chlorophyll?
- (a) Iron
 - (b) Sodium
 - (c) Potassium
 - (d) Magnesium
-
119. A chemical system is sealed in a strong rigid container at room temp and then heated vigorously change in work done during process is:
- (a) Positive
 - (b) Negative
 - (c) Zero
 - (d) Constant
-
120. The capacitive reactance of the AC circuit increases:
- (a) By increasing the frequency of AC
 - (b) By decreasing the frequency of AC
 - (c) Does not depend upon the frequency of AC voltage
 - (d) None of these
-
121. Which of the following is included in protostome?
- (a) Amphioxus (b) Sea horse
 - (c) Cheatopterus (d) Sea cucumber
-
122. Carboxylic acid reacts readily with alcohols in the presence of catalytic amounts of mineral acids to yield compounds called.
- (a) Azides
 - (b) Esters
 - (c) Ketones
 - (d) Ethers
-
123. To have an old head on young shoulders means:
- (a) To be wiser than one's age
 - (b) To be young but appear old
 - (c) To have ache in the shoulders
 - (d) To be old but appear young
-
124. The force exerted on a wire of length one meter carrying a current of one ampere lying normal to magnetic field is Called.



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- current in the wire is
(a) 10A (b) 50A (c) 100A (d) 500A
-
185. All of the following are polysaccharides EXCEPT:
(a) Cellulose
(b) Glycogen
(c) Starch
(d) Lactose
-
186. The substances which undergo deformation with small force are called;
(a) Elastic substances
(b) Inelastic substances
(c) Diamagnetic substances
(d) Ductile substances
-
187. Which of the following is a swimming bird?
(a) Penguin (b) Ostrich (c) Hawk
(d) Kiwi
-
188. The expression for w in the first law of thermodynamics if negative implies all of the following EXCET:
(a) Total internal energy has decreased
(b) System has lost heat
(c) Work done by the system
(d) Work done on the system
-
189.
-
190. In a Galvanic cell the following reaction takes place:
 $2H_2 + O_2 + 4H^+ + 4e^-$ it occurs at the
(a) Cathode
(b) Anode
(c) External conductor
(d) Cathode and anode
-
191. Fatty acids are converted into carbohydrates by
(a) Glyoxisome (b) Bile juice
(c) Pancreatic juice (d) Lysosomes
-
192. The military coup in the country brought an end to ___ rule by the emperor.
(a) Omnipotent (b) Almighty
(c) Dictatorial (d) Monopolistic
-
193.
-
194. The amount of energy required to break the nucleus into constituent nucleons is called;
(a) Exultation energy (b) Ionization energy
(c) Binding energy (d) Work function
-
195. When the kidney fails to form urine the condition is called.
(a) Nephritis
(b) Nephritis
(c) Ptosis
(d) Anuria
-
196. A sample of gas has a volume of 450 ml at $270^{\circ}C$ when its temperature is increased to its volume becomes:
(a) 480 ml (b) 460 ml (c) 470 ml
(d) 475ml
-
197. When α particle is emitted by radium ^{88}Ra 226 the daughter nucleus is radon the mass number and charge number of which will be:
(a) $^{90}Rn^{220}$
(b) $^{86}Rn^{222}$
(c) $^{89}Rn^{226}$
(d) $^{90}Rn^{222}$
-
198. The malarial patient feels chill and fever when:
(a) merozoites increase their population in RBC and burst open the RBC
(b) sporozoites enter the blood stream



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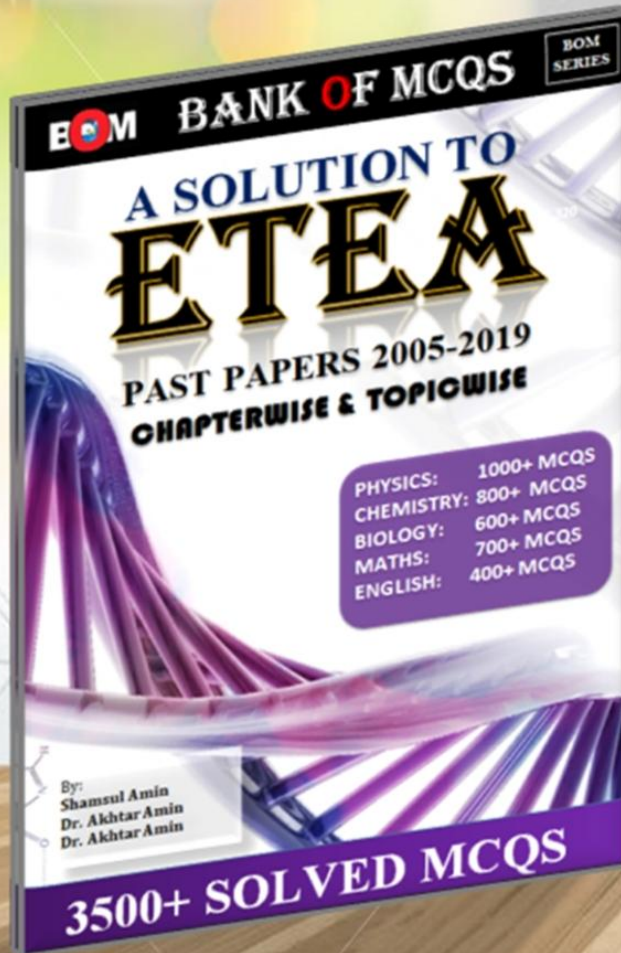
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|------|---|
| 1. | The graph of $y^2 = 4ax$ is symmetric about:
(a) y-axis
(b) x-axis
(c) Origin
(d) None of the above |
| 2. | She wears sun glasses to ___ her eyes from the harmful rays of the sun.
(a) Prevent
(b) Protect
(c) Defend
(d) Shelter |
| 3. | The solubility of solute depends on:
(a) Temperature of solution
(b) Quantity of solvent
(c) Quantity solute
(d) All the three choices |
| 4. | Several resistors are connected in parallel the resistance of their equivalent resistor
(a) Increase (b) Decrease
(c) Not change (d) None of these |
| 5. | The lines $6x+2y+8=0$ & $x-3y+7=0$ are:
(a) Perpendicular
(b) Parallel
(c) Passing through origin
(d) None of the above |
| 6. | The number of electron in one coulomb of charge are:
(a) 6.25×10^{21}
(b) 1.6×10^{-27}
(c) 6.25×10^{18}
(d) $.6 \times 10^{-19}$ |
| 7. | By definition $n \frac{(A \cap B)}{n(B)}$ defines:
(a) $P(A/B)$ (b) $P(B/A)$ (c) $P(A \cap B)$
(d) $P(A \cup B)$ |
| 8. | The noisy behavior of the children ___ their teacher.
(a) Aggrieved (b) Impeached
(c) Tempered (d) Incensed |
| 9. | With increase in atomic number the basic character of s-block elements:
(a) Decreases
(b) Increases
(c) First increases and then decreases
(d) Does not change |
| 10. | For irreversible cycle the net change of entropy:
(a) Remains constant (b) Increases
(c) Decreases (d) None of these |
| 11. | The variables involve in a linear problem are called ___ constraints:
(a) Non negative (b) Positive
(c) Problem (d) Both A and C |
| 12. | $H_2SO \rightarrow H_3O^+ + HS^-$
(a) Oxidation reaction
(b) Reduction reaction
(c) Acid base reaction
(d) No oxidation reduction |
| 13. | When the drag force on the droplet becomes equal to its real weight the droplet will fall with.
(a) Maximum acceleration
(b) Minimum acceleration
(c) Zero acceleration
(d) Acceleration due to gravity |



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14. $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n =$
(a) e
(b) $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^{ln}$
(c) 1
(d) Both A & B
15. The angular velocity of earth in one rotation (daily) is
(a) $\frac{\pi}{2}$ 2-rad hr^{-1}
(b) $\frac{\pi}{2}$ rad hr^{-1}
(c) $\frac{\pi}{3}$ rad h^{-1}
(d) $\frac{\pi}{12}$ rad hr^{-1}
16. The asymptotes of the hyperbola $\frac{\pi}{9} - \frac{y}{4} = 1$ are:
(a) $y = \pm \frac{2}{3}x$
(b) $x = \pm \frac{2}{3}y$
(c) $y = \pm X$
(d) None of the above
17. The students will go camping _____ the vacations.
(a) At (b) During (c) For (d) In
18. The heat capacity of a substance at constant volume is directly related to the;
(a) Enthalpy H
(b) Enthalpy S
(c) Internal energy U or E
(d) Free energy G
19. The vector produce of vector A by itself is:
(a) 1 (b) Zero (c) -1 (d) Null vector
20. If $X = \{a,b,c,d\}$, $Y = \{1,2,3,4\}$ and $g = \{(a,3),(b,2),(c,3)\}$ then g is ___ function from x to y.
(a) 1-1
(b) Onto
(c) Bijective
(d) None of the above
21. Elastic collision involves:
(a) Loss of energy
(b) Gain of energy
(c) No relation between energy & elastic collision
(d) No gain no loss of energy
22. The dimensions of torque are:
(a) $[MLT^{-2}]$
(b) $[ML^2T^2]$
(c) $[MLT^{-1}]$
(d) $[ML^2T^2]$
23. The triangular ratios of $2405\frac{\pi}{2}$ are the same as that of:
(a) $\frac{3\pi}{2}$
(b) $\frac{3\pi}{4}$
(c) $\frac{5\pi}{4}$
(d) $\frac{\pi}{2}$
24. The point at which an applied force produces a linear acceleration but no rotation is:
(a) Centre of gravity (b) Centre of body
(c) Weight of body (d) None of these
25. Which one of the following is the strongest acid?
(a) CH_2ClCH_2-COOH
(b) CH_3-COOH
(c) $CHCl_2-COOH$
(d) CH_3-CH_2-COOH
26. Species in search of the positive charge are called;
(a) Reducing agent (b) Nucleophile
(c) Bases (d) Electrophone
27. If a machine does 550 Foot pound



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- transition element
(a) Zn (b) Cr (c) Mn (d) Ni
89. Two forces of 12N and 6N are applied simultaneously to a body. The maximum magnitude of their resultant is:
(a) 24N (b) 30N (c) 18N (d) 36N
90. $\cos \left| \frac{-2\pi}{3} \right|$ lies in
(a) 1st quadrant (b) 2nd quadrant
(c) 3rd quadrant (d) 4th quadrant
91. Faisal has made no ___ progress in his studies
(a) Notice (b) Noticeable
(c) Noticeably (d) Noticed
92. A reaction between CO and H₂O is CO(g) + H₂O -----CO_{2(g)}+H₂ the unit of equilibrium for this reaction is:
(a) Mol/liter (b) Liter/mol
(c) Dimensionless (d) Mol/cm³
93. The amount of energy required to eject an electron from the metal surface is called:
(a) Work function (b) Threshold energy
(c) Rest mass energy (d) Total energy
94. Urea formation occurs in:
(a) Kidney (b) Liver (c) Spleen (d) Lungs
95. Which of the following group is considered to have a deactivating effect during aromatic substitution?
(a) -OH
(b) -NH₂
(c) -CH₃
(d) -CN
96. If the speed of the moving particle increases the wavelength associated with it will.
(a) Increase (b) Decrease
(c) Not change (d) None of these
97. $\lim_{m \rightarrow \infty} \left(1 + \frac{1}{m} \right)^{20} =$
(a) 0 (b) ∞ (c) e (d) 1
98. Of the four chlorides listed below which does not readily dissociate to form ions in water?
(a) NaCl (b) LiCl (c) AgCl (d) CaCl₂
99. The nuclei having the same mass number but different atomic number are called:
(a) Isobars
(b) Isotopes
(c) Isotones
(d) Isomars
100. $\int e^{\sin x} \cos x dx =$
(a) $\sin x e^{\sin x} + c$
(b) $e^{\sin x} + c$
(c) $\cos x e^{\sin x} + c$
(d) None of above
101. According to the Bronsted lowery concept which of the following species cannot function as an acid?
(a) SO₄⁻²
(b) H₃O⁺
(c) HSO₄⁻
(d) NH₄
102. The atoms of an element having same atomic number but different mass number are called.
(a) Isotones
(b) Isotopes
(c) Isobars
(d) Isomars
103. The lines represented by $x^2+5xy-y^2 = 0$ are:
(a) Parallel (b) Coincident
(c) Perpendicular (d) None of the above



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- (c) Rutherford
(d) Heisenberg
119. Which scientist made the following proposal equal volumes of gases under the same conditions of temperature and pressure contain the same number of particles?
(a) Gay lussac
(b) Curie
(c) Dalton
(d) None of the above
120. The emf in a milli Henry inductor in which the current changes from 3A to 1A in a millisecond is:
(a) 2 volt
(b) 0.2 volt
(c) 20volt
(d) 0.02 volt
121. $\sin 30^\circ \cdot \cos 60^\circ + \cos 30^\circ \cdot \sin 60^\circ =$
(a) 0 (b) $\frac{1}{2}$ (c) 1 (d) ∞
122. The young officer was ___ because of his Excellent performance.
(a) Raised (b) Progressed
(c) Improved (d) Promoted
123. Which of the statements given below is NOT a property of ammonia?
(a) Is a breasted base
(b) Has ability to form complex
(c) May display acidic behavior
(d) Can't be easily liquefied by cooling or compressing
124. Let A be a matrix of order $n \times n$ then $|A| =$
(a) $|-A|$
(b) $|A-1|$
(c) $|At|$
(d) None of these
125. The rms value of alternating voltage
(a) 1.77 volt (b) 17.7 volt
(c) .707 volt (d) 0.0177 volt
126. They heard the sirens ___ as the fire engines approached:
(a) To will
(b) Wail
(c) Willed
(d) Willing
127. How much heat is absorbed by 100g of water when its temperature decreases from 25°C to 5°C ? (heat capacity is 4.2j/gk)
(a) 84,000j (b) $-2000/4.2\text{j}$
(c) $2000/4.2\text{j}$ (d) $-84,00\text{j}$
128. If the sum of the coefficients in the expansion $(1+x)^n$ is 2^n then the sum of the coefficients in the expansions of $(1+x)^m$ is:
(a) 2^m
(b) $m+1$
(c) 2^{m+n}
(d) 2^{n-1}
129. Let $OP = a$ and $OR = b$ then $PR =$
(a) $a-b$
(b) $b-a$
(c) $A+b$
(d) None of the above
130. Which of the following molecules contains six bonding electrons?
(a) NCl_3
(b) CO_2
(c) H_2S
(d) SF_6
131. The motion of the rocket in space is according to law of conservation of:
(a) Energy
(b) Charge
(c) Mass
(d) Momentum
132. Range of $f(x)=x^2+1$ is