

PRACTICE SOLVED PAPER-3

- For a given solenoid, magnetic field is directly proportional to
 - length of solenoid
 - power applied
 - voltage
 - current
- Moving charges produce
 - magnetic field
 - gravitational field
 - electric field
 - both a & c
- A composite wall is made of three layers of different materials having thickness 2, 3, and 4cm. Thermal conductivity of materials are 0.10, 0.15 and 0.20 W/m.K respectively. Find total thermal resistance of the wall if the wall has a uniform area of 1m^2 ?
 - 0.6 K/W
 - 0.8K/W
 - 0.10 K/W
 - 0.12 K/W
- Superposition of two waves of slightly different frequency and travelling in same direction produces
 - Stationary waves
 - Interference
 - Beats
 - All of these
- What is a diffraction grating?
 - slanting glass
 - Diffraction of light
 - glass plate having large number of slits
 - all of above
- All the derived quantities can be expressed by _____ base quantities.
 - 3
 - 7
 - 2
 - 11
- What is the uncertain average value of 24.6, 25.0, 25.4, 24.9 and 25.1
 - 25.0 ± 0.2
 - 25.0 ± 1
 - 25.0 ± 0.1
 - None of these
- What is the value of energy stored in a string if $E = 250\text{MPa}$, $A = 0.0002\text{m}^2$ and $l = 2\%$ of \sqrt{L} ?
 - 4J
 - 8J
 - 10J
 - 12J
- Chemical properties of an element depends upon
 - no. of proton
 - no. of valence electrons
 - no. of neutron
 - both a & b
- The sum of internal energy (U) and the product of pressure and volume (PV) is known as
 - work
 - enthalpy
 - pressure
 - entropy
- In magnetic resonance imaging, which one is used
 - weak electric field
 - weak magnetic field
 - strong electric field
 - strong magnetic field
- A bullet 8g fired from a rifle of mass 8kg moves with velocity of 400m/s. Find recoil velocity of rifle
 - 0.4m/s
 - 0.1m/s
 - 0.8m/s
 - 0.64m/s
- The relation between Young's modulus Y and bulk modulus K for a cubic body is given by
 - $YI = KV$
 - $YI^2 = K\Delta V$
 - $YI^2 = K(\Delta I)^2$
 - $YI^2 = KV$
- Torque on current carrying coil is given by
 - $IBAsina$
 - $IBAtana$
 - $IBLsina$
 - $IBAcosa$

15. Mass spectrograph is used to
- sort out isotopes of element
 - find the relative e/m values of atoms in a sample
 - sort out polymers of a compound
 - find mass of molecules

16. Complete the equation ${}^A_Z X \rightarrow {}^A_Z X +$
- β particle
 - α particle
 - γ -rays
 - X-rays

17. Convert 50 kPa into MPa:
- 0.5 MPa
 - 0.05 MPa
 - 50000 MPa
 - 5 MPa

18. Dimension of gravity is
- [MLT]
 - [MLT⁻²]
 - [LT⁻²]
 - None

19. A specimen will change permanently after
- proportionality limit
 - yield point
 - fracture point
 - ultimate tensile stress point

20. Which of the following is associated with the development of voltage which tends to flow of charges?
- voltage
 - emf
 - potential difference
 - current

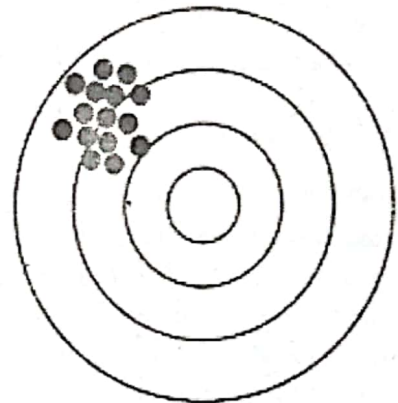
21. Stresses produced in torque transmitting shaft are
- bending stresses
 - normal stresses
 - shear stresses
 - all of these

22. Two waves having wavelength of 0.5cm interfere constructively. Find path difference considering 3 waves motion.
- 1cm
 - 1.5cm
 - 6cm
 - None of these

23. A solenoid is cut into a straight conductor. What is the value of magnetic field produced if current I pass through it?

- $\mu_0(1/2\pi r)I$
- $\mu_0(2\pi r)I$
- $\mu_0 n(2\pi r)I$
- $\mu_0 nI$

24. If the centre of all concentric circles represents the true value and dots represent the observed values then result of measurement is:



- inaccurate and imprecise
- accurate and imprecise
- accurate and precise
- inaccurate and precise

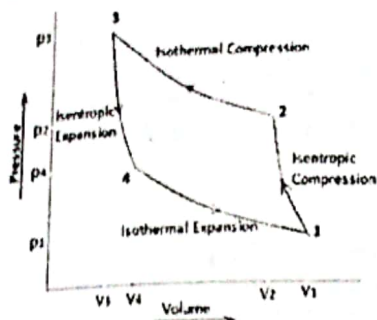
25. At which temperature the velocity of sound is 3 times its velocity at 20 C?
- 2637 K
 - 1300 K
 - 3945 K
 - 343 K

26. The thermal or temperature stress is a function of
- increase in temperature
 - coefficient of linear expansion
 - modulus of elasticity
 - all of these

27. Use of optical fibre in medical instruments for viewing inside the human body, laser surgery and taking pictures of inaccessible parts of body is called
- telecopy
 - endoscopy
 - optical imaging
 - optics

28. Perpetual motion is according to
- Newton's 1st law of motion
 - Newton's 2nd law of motion
 - Law of gravitation
 - Newton's 3rd law of motion
29. Which of the following does not obey Ohm's law?
- Diodes
 - Azoetropes
 - Transistors
 - All of these
30. When a current carrying conductor is placed in a magnetic field it experiences
- current
 - velocity gradient
 - force
 - potential difference
31. A heat engine
- take heat at higher temperature and convert part of it into useful work and release remaining into sink
 - take heat at lower temperature and convert part of it into useful
 - all of these
 - take heat at lower temperature and release it into hot reservoir by taking external work input
32. Convex lens of small focal length is preferred for a magnifying glass because
- small focal length is better for large objects
 - lens with small focal length are economical
 - small focal length gives large magnifying power
 - small focal length reduces the magnifying power
33. MRI is visual display of _____ produced by body parts.
- waves
 - weak magnetic field
 - weak electric field
 - all of these
34. Echo is reverberation of
- loudness
 - energy
 - vibrations
 - sound
35. At a certain temperature the average speed of which of the following gas is highest?
- H₂
 - Ne
 - CO₂
 - All have same
36. MRI stands for _____ and is carried out with _____.
- Magnetic Resonance Imaging, strong magnetic field
 - Magnified Resonance Imaging, Weak magnetic field
 - Magnified Resonance Imaging, Strong electric field
 - Magnetic Resonance Imaging, Weak electric field
37. Least distance of distinct vision _____ with age.
- Increase
 - decrease
 - remain constant
 - may increase or decrease with increase in age
38. Number of input/s to NOT operation?
- 2
 - 4
 - 3
 - 1
39. What will be minimum X-rays wavelength accelerated through a potential difference of 2000 volt?
- $6.2 \times 10^{-11} \text{m}$
 - $6.2 \times 10^{-10} \text{m}$
 - $6.2 \times 10^{-9} \text{m}$
 - $6.2 \times 10^{-8} \text{m}$
40. Charles law gives relation between:
- Temperature and pressure
 - Volume and temperature
 - Volume and number of moles
 - Volume and pressure
41. Two reversible heat engine functions between 1200K and T₂K and T₂K and 300 K respectively. Find T₂ if their efficiencies are the same
- 800K
 - 600K
 - 1200k
 - 1000K

42. Figure shown below represent a



- a. Carnot Heat pump
 b. Reversed Carnot cycle
 c. both a & b
 d. Carnot Heat engine
43. By sudden expansion of gases, the temperature decreases, this effect is called:

- a. Joule Thomson effect
 b. JJ effect
 c. Expansion effect
 d. None of the above.

44. X-rays are

- a. High Energy Photon
 b. Electromagnetic waves
 c. Radio-isotopes
 d. Both a & b

45. Which of the following process is used to obtain plane polarized light by using dichroic substances?

- a. selective absorption
 b. reflection through surfaces
 c. scattering by small particles
 d. reflection through crystals

46. Using the following data, calculate the molar mass of the naturally occurring argon in g/mol.

Isotope Isotopic % Abundance

^{40}Ar 39.9624 g/mol 99.600%

^{38}Ar 37.96272g/mol 0.063%

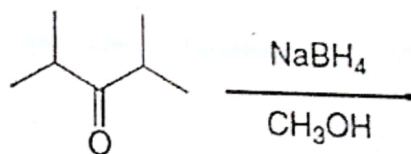
^{36}Ar 35.96755g/mol 0.337%

- a. 38.876 g/mol
 b. 39.948 g/mol
 c. 38.874 g/mol
 d. 39.945 g/mol

47. When an alkali earth metal is oxidized, what is/are the product(s) formed?

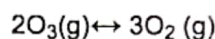
- a. Metal oxide
 b. Metal oxide and hydroxide ion
 c. Metal oxide and hydrogen gas
 d. Metal oxide and water

48. What is produced in this reaction?



- a. 1° alcohol
 b. 2° alcohol
 c. 3° alcohol
 d. Carboxylic acid

49. In what direction will the reaction proceed if 2 M of O_2 and 1.78885×10^{-6} M of O_3 are present in a section of the stratosphere? The equilibrium constant of this reaction is 2.5×10^{12} at 2300°C



- a. From right to left
 b. From left to right
 c. Cannot be determined because the value is too big
 d. At equilibrium

50. What is/are the product(s) produced when $\text{SO}_3(\text{g})$ is reacted with H_2SO_4 ?

- a. Sulfurous acid and hydrogen gas
 b. Oleum
 c. Sulfur dioxide and hydrogen gas
 d. Sulfur dioxide and water

51. Normally, methyl bromide reacts with potassium hydroxide in SN_2 mechanism but it can also undergo SN_1 mechanism. What makes methyl bromide and potassium hydroxide SN_1 reaction different from an SN_2 reaction?

- a. Formation of nucleophile
 b. Both B and C
 c. Formation of carbocation
 d. Formation of racemic compounds

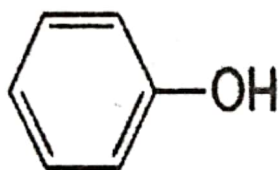
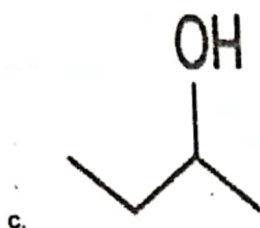
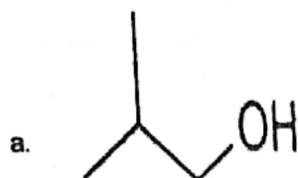
52. Which of the following is not a mechanism of dehydrohalogenation alkyl halides?

- a. It follows the Markovnikov's rule.
 b. A strong base removes the proton of acidic atom
 c. The electrons from bond breaking attacks toward a positive atom.
 d. It forms a double bond at the end of reaction.

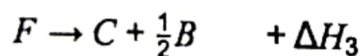
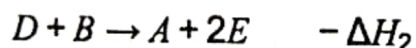
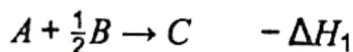
53. Calculate the %mass of Mg in Chlorophyll ($\text{C}_{55}\text{H}_{72}\text{O}_5\text{N}_4\text{Mg}$)?

- a. 0.9%
 b. 5.6 %
 c. 1.6 %
 d. 2.7%

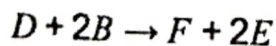
54. Which of the following is a secondary alcohol?



55. In a given thermochemical reaction:



Calculate the overall for the reaction:



- $-\Delta H_1 - \Delta H_2 + \Delta H_3$
- $\Delta H_1 + \Delta H_2 + \Delta H_3$
- $-(\Delta H_1 - \Delta H_2 - \Delta H_3)$
- $-\Delta H_1 - \Delta H_2 + 2\Delta H_3$

56. Increasing number of CFC production for industrial use has been a major contributor for the depletion of ozone molecules in the stratosphere. When CFC diffuses slowly to the atmosphere in the presence of UV light between 175nm to 220nm, ozone layer decomposes. If there is 1 mole of CFCl_3 (Freon-11) that has been released to the air, how many moles of oxygen are produced from the photodecomposition of ozone?

- 2
- 3
- 1
- 4

57. Which of the following is true

- The larger the energy of activation, the slower the reaction
- The larger the energy of activation, the smaller the rate constant.
- The higher the temperature, the faster the reaction
- The higher the energy, the less stable the species

58. Saponification is a process in which alkaline hydrolysis of esters forms a very important cleansing product and cosmetics. What is the important product that is generated when hydrolysis of esters happens?

- Acid anhydride
- Phenoxide
- Protic acid
- Carboxylate anion

59. Which has the lowest percentage composition by volume of gases in dry air at sea level?

- Ne
- Xe
- Ar
- Kr

60. Air is composed of N_2 and O_2 and they do not react with each other at STP because both are in stable form and nitrogen contains triple bonds which make the molecule very unreactive. Additionally, N_2 and O_2 are nonspontaneous (positive value of free Gibb's energy). However, it is possible for these two to react by changing some parameters. Which of the following parameters does not promote the reaction of N_2 and O_2 ?

- Increasing the pressure
- through lightning
- Introducing a catalyst at high temperatures
- Increasing the temperature

61. A DCS personnel observed a pressure fluctuation for 30 mins at the 100 L vessel until it stopped at 4.5 atm. He concluded that a possible leak of N₂ and unknown gas from other vessel has happened. Now, the program shows that 100 L vessel contains 10 mol of nitrogen at 30°C. What could be the possible identity of unknown gas?

- Carbon dioxide
- Oxygen
- Zinc Sulfide
- Hydrogen sulfide

62. Milk of Magnesia (Mg(OH)₂) is a laxative to treat heartburn, upset stomach, and indigestion. What is the solubility product expression of the said salt?

- $K_{sp}=[Mg^{2+}]^2[OH^-]$
- $K_{sp}=[Mg^{2+}][OH^-]$
- $K_{sp}=[Mg^{2+}][OH^-]^2$
- $K_{sp}=[Mg^{2+}]^2[OH^-]^2$

63. In 2005, it was recorded that Scripps Institution of Oceanography Pier in La Jolla California was affected by a phenomenon called the Red Tide or Algal bloom caused dinoflagellates. What is the cause of this event?

- Oil spill from Exxon Valdez disaster
- Warming of the ocean caused by greenhouse effect
- High concentration of nitrates and phosphates
- Earthquake from San Andreas Fault

64. Which of the following is not a characteristic to identify a phenol with bromine water?

- Formation of white precipitate
- Decolorization of bromine water
- Produces a white gas
- Smells like antiseptic

65. What is the order of reaction using the following data on the table:

Rate Constant	Initial Concentration	Half-life
5	1	0.14
5	0.8	0.14
5	0.6	0.14
5	0.4	0.14

- Third Order Reaction
- First Order Reaction
- Second Order Reaction
- Zero Order Reaction

66. Usually, alcohols are reacted with K₂Cr₂O₇ with its solvent H₂SO₄ to form a ketone without the presence of water. Where would the hydroxyl group attack when there is a presence of water?

- Dichromic acid
- Chromic acid
- Water
- Sulfuric acid

67. CFCs are commonly used as refrigerants available in general public. What is the chemical formula of Freon 12 which is the primary CFC derivative that was widely used for home and commercial units before it was banned by Montreal Protocol in 1989?

- CCl₄
- CFCl₃
- CF₂Cl₂
- CF₃Cl

68. Which of the following contributes to acid rain formation?

- Carbon dioxide
- Sulfur dioxide
- Nitrous oxide
- All of the above

69. Oxidation of tertiary alcohols will lead to

- Aldehyde
- Ketone
- Carboxylic acid
- No reaction

70. What is the name of the precipitate when Brady's reagent is used to test a benzaldehyde

- Organometallic precipitate
- Hydrazone
- Carboxylate salt
- TNT

71. Calcium phosphate is commonly found in bones as mineral and enamel of the teeth. What is the concentration of phosphate ion if the solubility product constant of calcium phosphate is 2.07×10^{-33} ?

- a. 1.14×10^{-7}
- b. 2.28×10^{-7}
- c. 3.42×10^{-7}
- d. 5.1984×10^{-14}

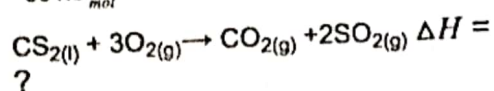
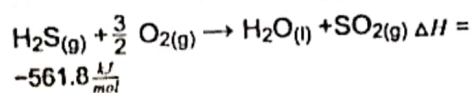
72. What is the oxidation number Cl in HClO_4 ?

- a. -1
- b. +5
- c. +6
- d. +7

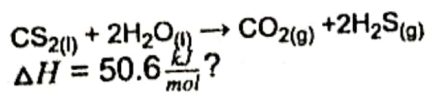
73. Arrange the following in increasing electronegativity: Na, P, Cl

- a. $\text{Cl} < \text{P} < \text{Na}$
- b. $\text{P} < \text{Cl} < \text{Na}$
- c. $\text{Cl} < \text{Na} < \text{P}$
- d. $\text{Na} < \text{P} < \text{Cl}$

74. In the given thermochemical reactions:



Calculate the molar enthalpy of formation of $\text{CS}_2(\text{l})$ if it gives an overall reaction of



- a. 511.2 kJ/mol
- b. -612.4 kJ/mol
- c. -1073 kJ/mol
- d. 87.3 kJ/mol

75. Which of the following does not exhibit hydrogen bonding?

- a. H_2O
- b. H_2S
- c. HF
- d. NH_3

76. A bottle containing $\text{Mg}(\text{OH})_2$ solution with a mark of 80% $\text{Mg}(\text{OH})_2$ by mass and a density of 1.27 g/mL is prepared for dilution. If 50 mL of this solution is diluted to a final volume of 600 mL, what is the molarity of the resulting solution?

- a. 17.5 M
- b. 5.62 M
- c. 10.9 M
- d. 1.46 M

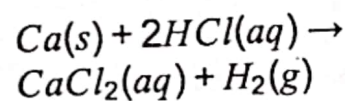
77. Calculate the mass of 0.8 carat diamond stone if the total mass of the engagement ring is 10160 mg. The band of the ring is made of 10g of gold.

- a. 20.2 g
- b. 0.16 g
- c. 0.8 g
- d. 10.8 g

78. The following choices determines the protein structure except

- a. The type of amino acid
- b. The number of amino acid
- c. The sequence or order of amino acid
- d. The number of amino acid residues

79. What is the reducing agent of this equation?



- a. $\text{Ca}(\text{s})$
- b. $\text{H}_2(\text{g})$
- c. $\text{Cl}_2(\text{aq})$
- d. $\text{HCl}(\text{aq})$

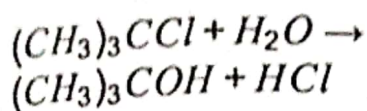
80. Which of the following is not a function of Teflon?

- a. Low coefficient of friction
- b. Outstanding performance at extreme temperatures
- c. Not resistant to any chlorinated products
- d. Non-wetting

81. Which of the following will readily react the most with sodium metal at room temperature?

- a. 1° alcohol
- b. 2° alcohol
- c. 3° alcohol
- d. Phenol

82. A chemical equation undergoes a substitution reaction:



Calculate the overall ΔH^0 if the bond energies of

$(CH_3)_3CCl$, H_2O , $(CH_3)_3COH$, HCl are 331, 498, 401, and 431 kJ/mol, respectively.

- 1 kJ/mol
- +1 kJ/mol
- 3 kJ/mol
- +3 kJ/mol

83. What is secondary pollutant?

- Are those formed by chemical interactions
- Are those released from human respiration
- Are those produced from vehicles
- Are those emitted directly from the source

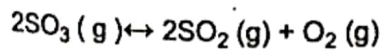
84. What is the bond angle of tetrahedral shape with no lone pairs?

- 109.5
- 120
- 180
- 90

85. What is the nature of potassium in the complex ion $K_2[Co(CN)_6]$?

- Lewis acid
- Neutral metal
- Lewis base
- Counter ion

86. In this reaction:



Calculate the K_p value if the K_c value is 0.0182 at 1050 K.

- 1.89
- 1.72
- 2.23
- 1.57

87. What is the product when aldehyde is oxidized with alkaline solution?

- Carboxylic acid
- Alcohol
- Ketone
- Salt of carboxylic acid

88. Which of the following statement is false:

$$\Delta H_{\text{vaporation}} = -\Delta H_{\text{condensation}}$$

$$[\Delta H]_{\text{vaporation}} =$$

$$- [\Delta H]_{\text{condensation}} \Delta H_{\text{vaporation}} =$$

$$-\Delta H_{\text{condensation}} \Delta H_{\text{vaporation}} =$$

$$-\Delta H_{\text{condensation}} \Delta H_{\text{vaporation}} =$$

$$-\Delta H_{\text{condensation}} \Delta H_{\text{vaporation}} =$$

$$-\Delta H_{\text{condensation}} \Delta H_{\text{vaporation}} =$$

a. $-\Delta H_{\text{condensation}}$

b. $\Delta H_{\text{melting}} = -\Delta H_{\text{sublimation}}$

c. $\Delta E_{\text{system}} = -\Delta E_{\text{surroundings}}$

d. $\Delta H_{\text{ice}} = -\Delta H_{\text{fusion}}$

89. Which of the following statements does not conform to all

- Increasing electronegativity
- Increasing boiling point
- Shorter surface area
- Shorter bond length

90. Which of the following has the shortest bond if the elements on the choices bond with atom oxygen

- Be
- C
- Mg
- Si

91. Function of HCl in stomach is
- It prevents underlying walls from being digested
 - It adjusts the pH for pepsin for action in zymogen cells
 - It softens the food and kills microbes
 - All of the above
92. _____ causes most potent greenhouse effect in terms of efficiency.
- Carbon dioxide
 - Ammonia
 - Nitric oxide
 - Chlorofluorocarbons
93. _____ is the most common respiratory substrate as a source of energy
- Glucose
 - Fructose
 - Sucrose
 - Glycogen
94. Ozone depletion gives rise to
- exposure to UV rays
 - eutrophication
 - acid rain
 - All of the above
95. The lymph vessels empty in
- Veins
 - Arteries
 - Capillaries
 - All of the above
96. The process of genetic information flowing from DNA to RNA to proteins is called
- gene annealing
 - gene mutation
 - gene expression
 - gene therapy
97. Human male reproductive system consists of
- Testes
 - Ducts
 - glands
 - all of the above
98. Ascaris is
- Derived from only two embryonic cell layers - ectoderm and endoderm, but no mesoderm
 - Derived from three embryonic cell layers - ectoderm, mesoderm, and endoderm
 - Haploid
 - An invertebrate lacking a coelom
99. Antidiuretic hormone increases absorption of
- sodium
 - chlorine
 - water
 - ammonia
100. In transgenic animals gene is microinjected into eggs
- By hand
 - By vortex mixer
 - By transfusion
 - All of the above
101. Testosterone is secreted by
- Interstitial cells
 - Seminiferous tubules
 - Vas deferens
 - Sertoli cells
102. Which of the following STD affects CNS, reproductive organs, heart and skin?
- Gonorrhea
 - Syphilis
 - Genital herpes
 - AIDS
103. All of the following processes of nitrogen cycle are useful for plants except
- Ammonification
 - Nitrification
 - Denitrification
 - Both a and c
104. Transpiration through stems of the plants takes place through
- Lenticular transpiration
 - Cuticular transpiration
 - Stomatal transpiration
 - All of the above
105. Kidney stones can be broken down using a procedure known as
- Lithotrophy
 - Lithography
 - Lithotripsy
 - All options are correct

106. All are vestigial organs of human except:

- a. Appendix
- b. Coccyx
- c. Nictating membrane
- d. None of the above

107. Cumulus cells

- a. Form corpus luteum
- b. Cling to the egg after ovulation occurs
- c. Remain with follicular cells after ovulation occurs
- d. Form lining of the ovary

108. Membrane covering kidney is called

- a. Peritonium
- b. Pericardium
- c. Perizonium
- d. none of the above

109. Corpus collosum contains a bundle of

- a. Dendrites
- b. Axons
- c. Neuroglial cells
- d. None of the above

110. Secretions from liver and pancreas are stimulated by:

- a. Pepsin
- b. Gastrin
- c. Secretin
- d. All of the above

111. A non-protein co-factor tightly bound to the enzyme through covalent bond

- a. Activator
- b. Prosthetic group
- c. Co-enzyme
- d. Apo-enzyme

112. _____ cannot be hydrolysed

- a. Monosaccharide
- b. oligosaccharide
- c. polysaccharide
- d. None

113. Major reservoir of nitrogen is

- a. soil
- b. air
- c. water
- d. plants

114. _____ is involved in amino acid activation

- a. ATP synthetase
- b. amino acyl rRNA synthetase
- c. amino acyl mRNA synthetase
- d. amino acyl tRNA synthetase

115. _____ is responsible for displacing the set point of hypothalamus above 37 C°

- a. Pyrenins
- b. Pyridoxins
- c. Pyrogens
- d. All of the above

116. Pressure flow theory was proposed by

- a. Dixon
- b. Mohl
- c. Munch
- d. Darwin

117. Which of the following structures is absent in higher plants and found in animal cells:

- a. Centriole
- b. Cytoskeleton
- c. Mitochondria
- d. Cytoplasm

118. Function of the guard cells is

- a. Protect the plant in extreme conditions
- b. Guttation
- c. Fight against pathogens
- d. Transpiration

119. Microbicidal agents

- a. kill bacteria
- b. inhibit growth of bacteria
- c. both
- d. none

120. The organisms able to use sunlight directly as a source of energy are

- a. Autotrophs
- b. Herbivores
- c. Heterotrophs
- d. Fungi

121. All of the following statements explain PCR except

- a. It is carried out in-vitro
- b. It is highly specific
- c. Taq polymerase is used
- d. Take its name from DNA polymerase

122. Foreign genes are introduced into _____ to produce transgenic plant
- Mature plant embryo
 - Immature plant embryo
 - Protoplasts
 - Both B & C
123. Organisms with foreign gene inserted into them
- Recombinant organisms
 - Hybrid organisms
 - Transgenic organisms
 - All of the above
124. Other name for lysogenic strains
- temperate phages
 - Avirulent phages
 - Both A and B
 - None
125. Which of the following is not prevented by genetically engineered vaccine?
- Hepatitis A
 - Hepatitis B
 - Hepatitis C
 - All of the above can be cured
126. Plastids are present in
- Animals
 - Plants
 - Animals and plants
 - Bacteria
127. hsp 60 and 70 are involved in
- initiation
 - elongation
 - termination
 - protein folding
128. All of the following have acinus except
- alveolar sacs
 - Alveolar ducts
 - Terminal bronchioles
 - Respiratory bronchiole
129. Lacteals are
- Branches of lymph capillaries
 - Lymph nodes
 - Lymph masses
 - Lymphocytes
130. Recombination frequency between two linked genes can be found out by
- Test cross
 - Normal cross
 - Back cross
 - None of the above
131. A triglyceride is
- a monomer
 - a polymer
 - a macromolecule
 - None
132. Protoplasts are plant cells from which
- New organelles are added
 - Nucleus is removed
 - Vacuoles are taken out
 - None
133. Ecological role of fungi is paralleled by
- bacteria
 - cyanobacteria
 - algae
 - all of the above
134. Which of the following component is found in the cell wall of fungi:
- Chitin
 - Glucan
 - Cellulose
 - Both A and B
135. The flattened membrane bounded sacs of endoplasmic reticulum are called
- Cisternae
 - Cristae
 - Vesicles
 - Tubules
136. Which organelle protects the cells from osmotic lysis?
- Cell membrane
 - Cell wall
 - Cytoplasm
 - Vacuole
137. Which of these is incorrectly matched?
- RFLPs-DNA -- fingerprinting
 - Protoplast-plant cell engineering
 - DNA ligase-Mapping human chromosome
 - DNA polymerase-PCR

138. Amylopectin is
- branched
 - unbranched
 - coiled
 - helix
139. which of the following diseases develops immunity in its victim?
- Measles
 - Herpes simplex
 - Polio
 - Hepatitis
140. Darwin's theory is also known as
- Theory of independent assortment
 - Theory of natural selection
 - Theory of segregation
 - Theory of extinction
141. Tay Sach's Disease is caused by absence of enzyme required to breakdown _____
- Lipids
 - Glycogen
 - Glucose
 - Proteins
142. _____ is the intake of liquid material across the cell membrane
- Phagocytosis
 - Endocytosis
 - Exocytosis
 - Pinocytosis
143. _____ is the final acceptor of electrons in respiratory chain
- Water
 - NADH
 - Cytochrome a3
 - Oxygen
144. The residue of food enters large intestine from ileum through a sphincter known as
- Cardiac sphincter
 - Pyloric sphincter
 - Ileocolic sphincter
 - Ileac sphincter
145. Antibiotic misuse is associated with
- Rapid cure
 - Increased resistance in pathogens
 - Disturbance of metabolism
 - Immunity
146. Which of the following has diploid number of chromosomes?
- Sperm cells
 - Egg cells
 - Seed cells
 - None of the above
147. Bacteriophage undergoes replication during
- lytic cycle
 - lysogenic cycle
 - lytic and lysogenic cycle
 - binary fission
148. Cattle has white hair which is crossed with the cattle with the red hair. The offspring they produced has both white and red hair simultaneously. This phenomenon is called:
- Complete dominance
 - Incomplete dominance
 - Co- dominance
 - Non- dominance
149. Stomach wall is composed of
- Connective tissue
 - Smooth muscles
 - Skeletal muscles
 - Both A and B
150. Progesterone is secreted by
- Ovaries
 - Endometrium
 - Corpus luteum
 - Placenta
151. Steward developed a complete carrot plant from the tiny piece of
- Phloem
 - Xylem
 - Meristem
 - Parenchyma
152. Lungs are not involved in
- Metabolism
 - Circulation system
 - Support and protection of organs
 - Exchange of O₂ and CO₂ between air and blood.
153. Secondary structure of protein is maintained by _____ bonds
- Glycosidic
 - Peptide
 - Ester
 - Hydrogen

154. Liver fluke is an endoparasite that might live in

- a. Liver of the birds
- b. Bile duct of birds
- c. Liver of the mammal
- d. Bile duct of mammal

155. Water along with dissolved minerals travels from roots to all the way to the leaves. This is called

- a. Ascent of sap
- b. Transpiration pull
- c. Cohesion-tension
- d. Root pressure

156. In an aqueous environment the most stable tertiary conformation is that in which _____ amino acids are buried inside the conformation.

- a. hydrophobic
- b. hydrophilic
- c. random
- d. No specific arrangement

157. Semi solid/semi liquid material of food + gastric juices

- a. Bolus
- b. Mucus
- c. Bolus or chyme
- d. Chyme

158. pili are involved in

- a. movement
- b. conjugation
- c. both A and B
- d. getting food

159. Basic components of a cell

- a. Cell wall, Nucleus, Vacuole
- b. Cell membrane, nucleus, vacuole
- c. Cell membrane, nucleus, cytoplasm
- d. Cell wall, nucleus, cytoplasm, vacuole

160. Intrinsic proteins in cell membrane are:

- a. Uniform
- b. Random
- c. Symmetrical
- d. Assymetrical

161. Complete the sentence using the grammatically correct word or phrase.

He had been for you since morning.

- a. Waited
- b. Waits
- c. Wait
- d. Waiting

162. Select the word or phrase which is closest in meaning to the underlined words.

Different brands are competing to sell homogeneous products.

- a. Similar
- b. High quality
- c. Durable
- d. Expensive

163. Complete the sentence using the most suitable preposition.

It is impossible to play him.

- a. with
- b. along
- c. by
- d. over

164. Complete the sentence using the grammatically correct word or phrase.

It _____ raining since midnight.

- a. Was
- b. Had been
- c. Has been
- d. Have been

165. Complete the sentence using the grammatically correct word or phrase.

Akbar and Saleemroom mates.

- a. Is
- b. Are
- c. Both
- d. Along

166. Complete the sentence using the most suitable preposition.

You are not going for sports you have finished your work.

- a. Upon
- b. Since
- c. After
- d. Until

167. Complete the sentence using the most suitable preposition.

After Jack described his plan, we had no doubt _____ what he wants to do.

- a. Into
- b. About
- c. In
- d. With

168. Complete the sentence using the grammatically correct word or phrase.

A pack of wolves together.

- a. Move
- b. moves
- c. Shall move
- d. Moved

169. Complete the sentence using the grammatically correct word or phrase.

Do you know the doctor is heart specialist.

- a. Which
- b. Whose
- c. Whom
- d. Who

170. Select the word or phrase which is closest in meaning to the underlined words.

We find Salah to be most edifying.

- a. Enlightening
- b. Discouraging
- c. Path making
- d. Helpful

171. Complete the sentence using the most suitable preposition.

I put an apple the kitchen table.

- a. at
- b. on
- c. in
- d. over

172. Complete the sentence using the grammatically correct word or phrase.

He _____ reached the home by this time.

- a. Had
- b. Will have
- c. Shall have
- d. Have

173. Complete the sentence using the grammatically correct word or phrase.

We _____ certainly take part in the drama.

- a. Shall be
- b. Will
- c. Shall
- d. Will be

174. Complete the sentence using the most suitable preposition.

Please sign your name on the dotted line _____ you read the contract.

- a. When
- b. If
- c. After
- d. As

175. The word closest in meaning to Gradient is _____

- a. Hang
- b. Decline
- c. Dent
- d. Slope

176. Select the word or phrase which is closest in meaning to the underlined words.

A narcissist is his own best friend.

- a. Religious person
- b. humble person
- c. Prison inmate
- d. Egocentric

177. The word closest in meaning to Deferment is _____

- a. Rush
- b. Delay
- c. Hurry
- d. Activate

178. Complete the sentence using the grammatically correct word or phrase.

Committee issued a report.

- a. Has
- b. Will have
- c. Will
- d. Have

179. Complete the sentence using the grammatically correct word or phrase.

I _____ reached home before the rain starts.

- a. Had
- b. Shall have
- c. Will have
- d. Have

180. Complete the sentence using the grammatically correct word or phrase.

My parents _____ on Boulevard street for 50 years and they are still there.

- a. Live
- b. Will have lived
- c. Have lived
- d. Had lived

Answer Key

Question Number	Correct Option	Question Number	Correct Option	Question Number	Correct Option	Question Number	Correct Option
1.	d	31.	a	46.	b	88.	b
2.	d	32.	c	47.	a	89.	c
3.	a	33.	b	48.	b	90.	b
4.	c	34.	c	49.	d		
5.	c	35.	a	50.	b		
6.	b	36.	a	51.	b		
7.	a	37.	b	52.	a		
8.	c	38.	d	53.	d		
9.	b	39.	b	54.	c		
10.	b	40.	b	55.	c		
11.	d	41.	b	56.	a		
12.	a	42.	c	57.	a		
13.	c	43.	a	58.	d		
14.	d	44.	d	59.	b		
15.	a	45.	a	60.	a		
16.	c			61.	a		
17.	b			62.	c		
18.	b			63.	c		
19.	b			64.	c		
20.	b			65.	b		
21.	c			66.	b		
22.	b			67.	c		
23.	a			68.	d		
24.	d			69.	d		
25.	a			70.	b		
26.	d			71.	b		
27.	b			72.	d		
28.	a			73.	d		
29.	d			74.	d		
30.	c			75.	b		
				76.	d		
				77.	b		
				78.	d		
				79.	a		
				80.	c		
				81.	a		
				82.	c		
				83.	a		
				84.	a		
				85.	d		
				86.	d		
				87.	d		

Question Number	Correct Option
91.	c
92.	d
93.	a
94.	a
95.	a
96.	c
97.	d
98.	b
99.	c
100.	d
101.	a
102.	b
103.	c
104.	a
105.	c
106.	d
107.	c
108.	a
109.	b
110.	c
111.	c
112.	a
113.	b
114.	d
115.	c
116.	c
117.	a
118.	d
119.	a
120.	a
121.	a
122.	d
123.	c
124.	c
125.	c

Question Number	Correct Option
126.	b
127.	d
128.	c
129.	a
130.	a
131.	c
132.	d
133.	a
134.	d
135.	a
136.	b
137.	c
138.	a
139.	a
140.	b
141.	a
142.	d
143.	d
144.	c
145.	b
146.	c
147.	a
148.	c
149.	b
150.	c
151.	a
152.	c
153.	d
154.	d
155.	b
156.	a
157.	d
158.	b
159.	c
160.	d

Question Number	Correct Option
161.	d
162.	a
163.	a
164.	b
165.	b
166.	d
167.	b
168.	b
169.	d
170.	a
171.	b
172.	b
173.	c
174.	c
175.	d
176.	d
177.	b
178.	a
179.	b
180.	c

Answers and Explanations

Question Number 1. Correct Option d

Explanation

Magnetic field produced inside a solenoid is given as

$$B = \mu_0 n I$$

For a given solenoid, $\mu_0 n$ is constant so B is directly proportional to current.

o

Question Number 2. Correct Option d

Explanation

A static charge produces electric field and moving charge produces magnetic field.

Question Number 3. Correct Option a

Explanation

Formula for thermal resistance is given as

$$R = L/K$$

Composite wall has layers in parallel, so

$$R = R_1 + R_2 + R_3$$

$$R = 0.06 \text{ m}^2 \text{K/W}$$

Question Number 4. Correct Option c

Explanation

Superposition of two waves of slightly different frequency and travelling in same direction produces beats. You can observe the phenomenon when two sound waves of marginally different frequency approach your ear, the alternating constructive and destructive interference causes the sound to be alternatively soft and loud. This is actually beats production.

Question Number 5. Correct Option c

Explanation

Diffraction grating is a glass plate having large number of parallel openings or slits.

Question Number 6. Correct Option b

Explanation

According to S.I units, there are 7 base quantities.

Question Number 7. Correct Option a

Explanation

Average of all 5 observations without uncertainty is

$$(26.6 + 25.0 + 25.4 + 24.9 + 25.1) / 5 = 25.0$$

Average of deviations magnitude of all the observations from value 25 is calculated as

$$(0.4 + 0 + 0.4 + 0.1 + 0.1) / 5 = 0.2$$

So result is

$$25.0 \pm 0.2$$

Question Number 8. Correct Option c

Explanation

We know that energy stored in a string is given as

$$E = \frac{1}{2} \left(\frac{EA}{L} l^2 \right)$$

$$\text{and } l = 0.02 \text{ L}$$

Putting in above relation, we find

$$E = \frac{1}{2} \left(\frac{EA}{L} l^2 \right)$$

$$E = \frac{1}{2} \left(\frac{250 \times 10^6 \times 0.0002 \times (0.02 \text{ L})^2}{L} \right)$$

$$E = 10 \text{ J}$$

Question Number 9. Correct Option b

Explanation

Chemical properties of an element depend upon number of electrons present outside the nucleus.

Question Number 10. Correct Option b

Explanation

The question statement basically describes the first law of thermodynamics. It states that the change in internal energy of a system is the amount of heat supplied to the system minus the work done by the system. Mathematically

$$\Delta U = Q - W$$

Where ΔU is the Change in internal energy, Q is the heat supplied and W is the work done

W can also be written as PV

So rearranging the above equation gives us

$$Q = W + \Delta U$$

which corresponds to heat or enthalpy

Question Number 11. Correct Option d

Explanation

In magnetic resonance imaging, strong magnetic field is used because the magnetic field should be strong enough to penetrate into the deeper organs of the body which are well protected by layers of bones and tissues.

Question Number 12. Correct Option a

Explanation

According to law of conservation of momentum
 $MV = mv$

MV = momentum of rifle

mv = momentum of bullet

$$V = mv/M$$

$$V = 0.4 \text{ m/s}$$

Question Number 13. Correct Option c

Explanation

We know that

$$Y = (F/A)/(\Delta L/L)$$

And

$$K = (F/A)/(\Delta V/V)$$

Both of the equations yield

$$F/A = Y \Delta L/L = K \Delta V/V$$

Put $V = L^3$ and $\Delta V = \Delta L \times \Delta L \times \Delta L$, we get

$$Y \Delta L/L = K(\Delta L \times \Delta L \times \Delta L)/L^3$$

$$YL^2 = K(\Delta L)^2$$

Question Number 14. Correct Option d

Explanation

Torque on current carrying coil is given by $IBA \cos \alpha$.

Question Number 15. Correct Option a

Explanation

Purpose of mass spectrograph is to sort out isotopes of element on the basis of their masses.

Question Number 16. Correct Option c

Explanation

When γ -rays are emitted from nuclei, there is no change in atomic number and atomic mass.

When α particles are emitted a helium nucleus is given out which consists of 2 protons and 2 neutrons

When β particles are given out 1 electron is emitted.

Question Number 17. Correct Option b

Explanation

$$1000 \text{ kPa} = 1 \text{ MPa}$$

So

$$50 \text{ kPa} = 0.05 \text{ MPa}$$

Question Number 18. Correct Option b

Explanation

Gravity has same unit as force. i.e kgms^{-2}

Question Number 19. Correct Option b

Explanation

After the yield point is reached, a specimen changes permanently and do not regain its original shape when applied force is removed.

Question Number 20. Correct Option b

Explanation

EMF is associated with the movement of the charges during production/development of electrical current.

Question Number 21. Correct Option c

Explanation

Stresses produced by twisting of an object, like shaft are called shear stress.

Question Number 22. Correct Option b

Explanation

Path difference is given by $\Delta S = n\lambda$

Where n is the number of wave motions and λ is the wavelength

So

$$\Delta S = 1.5\text{cm}$$

Question Number 23. Correct Option a

Explanation

In this case, number of turns per unit length is $1/2\pi r$, so formula becomes

$$B = \mu_0 (1/2\pi r) I$$

Question Number 24. Correct Option d

Explanation

Closeness of the multiple observations with one another is called precision. Whereas accuracy means how close the answer is to the true value. Hence the readings are precise but not accurate.

Question Number 25. Correct Option a

Explanation

We know that

$$\frac{vT}{\sqrt{20}} = \sqrt{\frac{T}{20}} = 3$$

$$\sqrt{\frac{T}{293}} = 3$$

Thus

$$T = 2637 \text{ K}$$

Question Number 26. Correct Option d

Explanation

Thermal stress is the function of

- Temperature
- Coefficient of thermal
- Modulus of elasticity.

Question Number 27. Correct Option b

Explanation

Statement describes the endoscopy.

Question Number 28. Correct Option a

Explanation

Perpetual motion is a continuous motion without any external aid and is according to Newton's first law of motion which states that an object will remain in state of motion if no external force is applied to it.

Question Number 29. Correct Option d

Explanation

Ohm's Law state that the current flowing through a device is directly proportional to the applied voltage. Therefore, the current and voltage have a linear relation as shown below

$$V = IR \text{ where } R \text{ is the resistance of the object}$$

Since all of the mentioned devices are made up of semiconductors which show non linear behaviour as a result none of the devices obey Ohm's Law.

Question Number 30. Correct Option c

Explanation

When a current carrying conductor is placed in a magnetic field it experiences a force because magnetic field of the wire due to current interacts with the outer magnetic field which causes a force or push to the conductor.

Question Number 31. Correct Option a

Explanation
A heat engine takes heat from hot reservoir and converts part of it into useful work and release remaining into sink.

Question Number 32. Correct Option c

Explanation
Convex lens of small focal length is preferred for a magnifying glass because

$$M = 1 + d/f$$

As f decrease M increases.

Question Number 33. Correct Option b

Explanation
Infected body parts produce weak magnetic field which when forms resonance with strong magnetic field applied, is displayed on the screen.

Question Number 34. Correct Option c

Explanation
Repeated sense of listening sound after small intervals is called reverberation which is generally named as echo. This phenomenon is also used in sound navigation systems.

Question Number 35. Correct Option a

Explanation
The average translational kinetic energy is written as :

$$T = \frac{2}{3k} \langle K.E \rangle$$

$$T = \frac{1}{3k} m \langle v^2 \rangle$$

At constant temperature,

$$\langle v^2 \rangle \propto \frac{1}{m}$$

Hence heavier the gas lesser is the speed and vice versa

Question Number 36. Correct Option a

Explanation
MRI stands for magnetic resonance imaging and is carried out with strong magnetic field.

Question Number 37. Correct Option b

Explanation
As a person grows in age, he generally suffers from the weakness of eye sight and the least distance distinct vision decreases.

Question Number 38. Correct Option d

Explanation
There is only one input of NOT operation.

Question Number 39. Correct Option b

Explanation
We know that

$$\frac{hc}{\lambda} = V e$$

$$\lambda = \frac{hc}{V e} = \frac{6.63 \times 10^{-34} \times 3 \times 10^8}{2000 \times 1.6 \times 10^{-19}}$$

$$\lambda = 6.2 \times 10^{-10} m$$

Question Number 40. Correct Option b

Explanation
Charles law is written as:
 $V \propto T$
Hence, it gives relation between volume and temperature.

Question Number 41. Correct Option b

Explanation
Efficiency of a heat engine is given as $1 - T_2/T_1$
where T_1 and T_2 are higher and lower temperature resp.
Given that, efficiency is same

$$T_2/1200 = 300/T_2$$

$$T_2 = 600K$$

Question Number 42. Correct Option c

Explanation
Reversed Carnot cycle and heat pump is same thing. Arrows show the reversed direction of cycle.

Question Number 43. Correct Option a

Explanation
The cooling effect in gases due to sudden expansion is called Joule Thomson effect.

Question Number 44. Correct Option d

Explanation
X-rays can be considered as high energy photons which are basically electromagnetic waves.

Question Number 45. Correct Option a

Explanation
Selective absorption process uses dichroic substances to get plane polarized light.

Question Number 46. Correct Option b

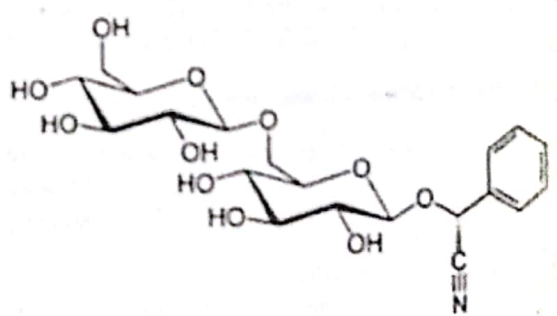
Explanation
Molar mass = \sum abundance (isotopic molar mass)
Molar mass of Argon = $(0.996 \times 39.9624) + (0.00053 \times 37.96272) + (0.00337 \times 35.96755) = 39.948 \text{ g/mol}$

Question Number 47. Correct Option a

Explanation
Strategy: Create the chemical equation and recall the chemical reactions of alkali earth metal.
Let's use magnesium as the alkali earth metal
 $2 \text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
Therefore the oxidation of alkali metal will produce metal oxide.

Question Number 48. Correct Option b

Explanation
The B⁻ of NaBH₄ attacks the carbonyl group to break the pi bond of ketone and create an electron rich site O⁻. The H atom in methanol protonates the O⁻ to form OH. The reduction of ketone forms a 2° alcohol.



The diagram shows a complex sugar derivative. It consists of a central pyranose ring substituted with two other pyranose rings at the 2 and 6 positions. The 2-positioned ring has hydroxyl groups at the 2, 3, and 4 positions. The 6-positioned ring has hydroxyl groups at the 2, 3, and 4 positions. A benzylidene group (a benzene ring attached to a CH2 group which is double-bonded to the oxygen of the 5-membered acetal ring) is attached to the 5-positioned oxygen. A nitrile group (-C≡N) is attached to the 1-positioned carbon of the 6-positioned ring.

Question Number 49. Correct Option d

Explanation
 $2\text{O}_3(\text{g}) \rightleftharpoons 3\text{O}_2(\text{g})$
 $Q = \frac{[\text{O}_2]^3}{[\text{O}_3]^2} = \frac{(2)^3}{(1.7885 \times 10^{-6})^2} = 2.5 \times 10^{12}$
 $Q > K_c$ Therefore it is in equilibrium.

Question Number	50.	Correct Option	b
-----------------	-----	----------------	---

Explanation

You can produce sulfuric acid by reacting sulfur trioxide with water. However, it forms a mist that is really hard to condense. So, they have made an alternative solution to increase the purity of sulfuric acid by reacting sulfur trioxide with 98% sulfuric acid to form oleum.

Question Number	51.	Correct Option	b
-----------------	-----	----------------	---

Explanation

S_N1 reaction differs from an S_N2 reaction in formation of carbocation and the formation of racemic compounds.

Question Number	52.	Correct Option	a
-----------------	-----	----------------	---

Explanation

The dehydrohalogenation of alkyl halides follows Zaitsev's rule which helps to predict the site selectivity of reaction type. The rests are left explained on the choices.

Question Number	53.	Correct Option	d
-----------------	-----	----------------	---

Explanation

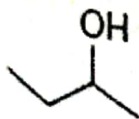
Molecular weight of $C_{55}H_{72}O_5N_4Mg$: $55(12) + 72(1) + 5(16) + 4(14) + 1(24) = 892$ g/mol

% mol of Mg = $\frac{1(24)}{892} \times 100 = 2.7\%$

Question Number	54.	Correct Option	c
-----------------	-----	----------------	---

Explanation

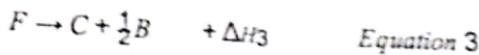
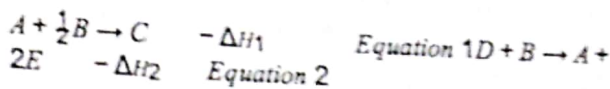
Phenol cannot be classified as alcohol because it has a benzene ring and it is sp^2 hybridized. So, the second degree alcohol is



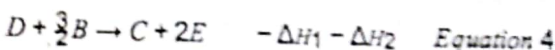
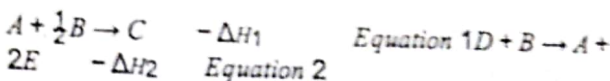
Question Number	55.	Correct Option	c
-----------------	-----	----------------	---

Explanation

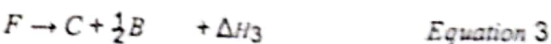
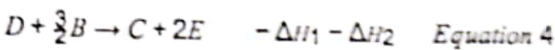
Strategy: Use the Hess Law to calculate the enthalpy formation of the series of reaction.



Equate 1 and 2: cancel A



Equate 4 and 3: Reverse Equation 3 and Cancel C

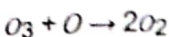
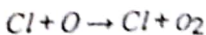
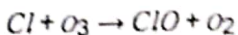
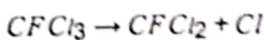


Therefore, the answer is $-(\Delta H_1 - \Delta H_2 - \Delta H_3)$

Question Number	56.	Correct Option	a
-----------------	-----	----------------	---

Explanation

Increasing number of CFC production for industrial use has been a major contributor for the depletion of ozone molecules in the stratosphere. When CFC diffuses slowly to the atmosphere in the presence of UV light between 175nm to 220nm, ozone layer decomposes. If there is 1 mole of $CFCl_3$ (Freon-11) has been released to the air, the number of moles of oxygen is



Question Number	57.	Correct Option	a
-----------------	-----	----------------	---

Explanation

The larger the activation energy, the slower the reaction. That is because it requires more energy for particles to successfully collide to each other.

Question Number 58. Correct Option d

Explanation

Saponification is a process in which alkaline hydrolysis of esters forms a very important cleansing product and cosmetics. The process forms an alcohol derivative and a carboxylate ion that will be protonated further by a metal to form a salt (soap).

Question Number 59. Correct Option b

Explanation

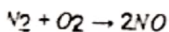
The lowest percentage composition by volume of gases in dry air at sea level is Xenon with 0.000006% by volume.

Question Number 60. Correct Option a

Explanation

Le Chatlier principle states that if pressure is increased for a system the equilibrium shifts such as to reduce the pressure of the system. Therefore under such circumstances the side which contains less no of gas particles will be favored.

The reaction between N_2 and O_2 is given below



Increasing pressure do not have effects on the equilibrium constant and therefore, it does not promote to produce more products. The number of moles of the reactant is equal to the number moles in product.

Question Number 61. Correct Option a

Explanation

Strategy: Get the number of moles using the ideal gas equation. Then, use it using Graham's Law of Diffusion equation to calculate the molecular weight. That's the time you can identify the identity of the compound.

$$PV = nRT$$

$$n_{mix} = \frac{PV}{RT} = \frac{4.5 \text{ atm}(100L)}{(0.08206 \frac{L \cdot atm}{mol \cdot K})(30+273)} = 18 \text{ mols}$$

$$n_{\text{unknown gas}} = n_{mix} - n_{N_2} = 18 - 10 = 8 \text{ mols}$$

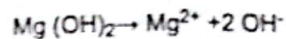
$$\frac{n_1 \times t_1}{n_2 \times t_2} = \sqrt{\frac{MW_2}{MW_1}}$$

$$\frac{10 \text{ mols}(30 \text{ mins})}{8 \text{ mols}(30 \text{ mins})} = \sqrt{\frac{MW_2}{28 \text{ g/mol}}}$$

$MW_2 = 44 \frac{g}{mol}$ possibly, it might be carbon dioxide

Question Number 62. Correct Option c

Explanation



$$K_{sp} = [Mg^{2+}][OH^-]^2$$

Question Number 63. Correct Option c

Explanation

In 2005, it was recorded that Scripps Institution of Oceanography Pier in La Jolla California was affected by a phenomenon called the Red Tide or Algal bloom caused dinoflagellates. The growth can be fueled by nitrates from fertilizers or urea, phosphates from detergents and other nutrients brought by discharges of treated sewage from municipal sewage treatment plants.

Question Number 64. Correct Option c

Explanation

When phenol is reacted with bromine water, bromine water decolorizes and white precipitate is formed with an antiseptic smell. It will not produce a white gas or smoke.

Question Number 65. Correct Option b

Explanation

In the first order of reaction, the half-life is independent to the concentration. If half-life decreases, then expect that concentration will decrease.

Question Number 66. Correct Option b

Explanation

In anhydrous condition, when potassium dichromate reacts with sulfuric acid, it forms a dichromic acid which is attacked by hydroxyl group of alcohol. But if there's a presence of water, the dichromic acid liberates 2 molecules of chromic acid. Hydroxyl group will attack chromic acid if there's a presence of water.

Question Number 67. Correct Option c

Explanation

CFCs are commonly used as refrigerants available in general public especially Freon 12. To get the chemical formula, the general equation is 90 + the number of Freon. If 90 + 12 gives 102, 1 must correspond to the number of carbon atoms, 0 for the number of hydrogen atoms, and 2 for the number of fluorine atoms. CFC has a general formula CF_xCl_{4-x} . If there must be 2 fluorine atoms, there must have 2 chlorine atoms. Therefore, the chemical formula is CF_2Cl_2 . This general formula is only applicable for CFC and not for CHFC and other derivative.

Question Number 68. Correct Option d

Explanation

Carbon dioxide, sulfur dioxide, and nitrous oxide when reacted with water will result to have a pH below 7 because it forms carbonic acid, sulfurous acid, and nitric acid respectively. Therefore, the answer is all of the above.

Question Number 69. Correct Option d

Explanation

Oxidation of tertiary alcohol would lead to no reaction because it lacks hydrogen atom from the carbon that acts a proton for the reaction to occur from the carbon.

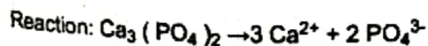
Question Number 70. Correct Option b

Explanation

Benzaldehyde will form a precipitation called hydrazones when Brady's reagent is added specifically to dinitrophenylhydrazone.

Question Number 71. Correct Option b

Explanation



Initial : - 0 0

Change -x +3x +2x

Equilibrium: - 3x 2x

$K_{sp} = [Ca^{2+}]^3 [PO_4^{3-}]^2$

$K_{sp} = [3x]^3 [2x]^2 = 2.07 \times 10^{-33}$

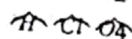
$x = 1.14 \times 10^{-7} = Ca_3(PO_4)_2$

$1.14 \times 10^{-7} \text{ of } Ca_3(PO_4)_2 \left(\frac{2 \text{ mole of } PO_4^{3-}}{1 \text{ mole of } Ca_3(PO_4)_2} \right) = 2.28 \times 10^{-7} \text{ of } PO_4^{3-} \text{ ion}$

Question Number 72. Correct Option d

Explanation

$+1 \times -2$



$1 + x - 2(4) = 0$

$x = +7$

Question Number 73. Correct Option d

Explanation

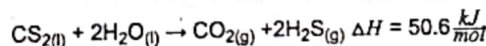
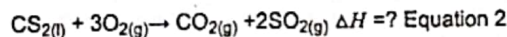
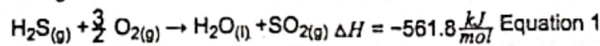
The electronegativity trend across a period is increasing from left to right. This is as you move from left to right across the period in a same period the proton number increases. However the inner shell electrons remains same as the electrons are added to the outer shell. Hence the outer shell electrons will be attracted more because of the increased positive charge of the nucleus.

Therefore, the answer is $Na < P < Cl$.

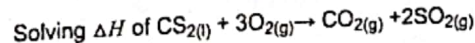
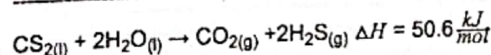
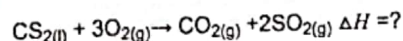
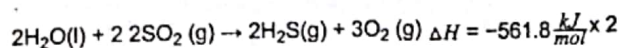
Question Number 74. Correct Option d

Explanation

Using Hess's Law :



Equate 1 and 2:



$2(561.8 \frac{kJ}{mol}) + x = 50.6 \frac{kJ}{mol}$

$x = -1073 \frac{kJ}{mol}$

$\Delta H_{rxn}^{\circ} = \sum nH_f^{\circ}(\text{products}) - \sum nH_f^{\circ}(\text{reactants})$

$-1073 \frac{kJ}{mol} = [(2)(-296.1) + (-393.5)] \frac{kJ}{mol} - [\Delta H_{cs2(l)}^{\circ}] \frac{kJ}{mol}$

$\Delta H_{cs2(l)}^{\circ} = 87.3 \frac{kJ}{mol}$

Question Number 75. Correct Option b

Explanation
 Hydrogen bonding is formed if hydrogen atom is covalently bonded to the three high electronegative atom; N, O, and F. Sulfur has low electronegativity when bonded with hydrogen. Hence, H₂S does not exhibit hydrogen bonding but a dipole-dipole force.

Question Number 76. Correct Option d

Explanation
 Strategy: Before getting the resulting molarity, you must calculate first the initial molarity using the given data.

$$M = \frac{(\% \text{ solute by mass})(\text{density of solution})}{\text{molecular weight}}$$

$$0.80(1.27 \frac{\text{g}}{\text{mL}})(\frac{1000 \text{ mL}}{1 \text{ L}}) = 17.5 \text{ M}$$

$$M_2 = \frac{M_1 V_1}{V_2} = \frac{17.5 \text{ M}(50 \text{ mL})}{(600 \text{ mL})} = 1.46 \text{ M}$$

Question Number 77. Correct Option b

Explanation
 An engagement ring is composed of a stone and a band.
 weight of 0.8 carat diamond stone = the total mass of engagement ring - the mass of the gold band weight of 0.8 carat diamond stone = 10160 mg ($\frac{1 \text{ g}}{1000 \text{ mg}}$) - 10g = 0.16g

Checking : if you know the conversion of carat to grams , then you can calculate is directly.

1 carat = 3.168 grains ; 1 gram = 15.4 grains

$$0.8 \text{ carat diamond} (\frac{3.168 \text{ grains}}{1 \text{ carat}}) (\frac{1 \text{ gram}}{15.4 \text{ grains}}) = 0.16 \text{ g diamond}$$

Total weight of the ring = 0.16 g of diamond + 10 g of gold = 10.16 g = 10160 mg

Question Number 78. Correct Option d

Explanation
 In 1930s, Linus Pauling and his team conducted a systematic way of identifying protein structures. The type and number of amino acids in a given protein along with the sequence or order in which these amino acids are joined together determine the protein's structure.

Question Number 79. Correct Option a

Explanation

$$\overset{0}{\text{Ca}}(s) + 2\overset{+1}{\text{Cl}}(aq) \rightarrow \overset{+2}{\text{Ca}}\text{Cl}_2(aq) + \overset{0}{\text{H}_2}(g)$$

In this equation, Cl is the spectator ion. A reducing agent is the one that undergoes Oxidation. We can identify oxidation when the oxidation number is increased after the reaction. Therefore, Calcium has increased from 0 to +2 and it is the reducing agent of the reaction.

Question Number 80. Correct Option c

Explanation
 Teflon is the most slippery substance that has low coefficient of friction. It also has outstanding performance at extreme temperatures and it is non-stick and non-wetting compound. It is also resistant to many chemicals such as chlorinated products because of its structure and electronic structure bound by fluorine monomers.

Question Number 81. Correct Option a

Explanation
 In many experiments, sodium metal reacts readily with methanol than any other longer chain alcohols. As the chain increases, the sodium metal is less reactive and requires more heat for it to react with longer chain alcohol or phenol.

Question Number 82. Correct Option c

Explanation
 $(\text{CH}_3)_3\text{CCl} + \text{H}_2\text{O} \rightarrow (\text{CH}_3)_3\text{COH} + \text{HCl}$

$$\Delta H = \sum H_{\text{bonds broken}} + \sum H_{\text{bonds formed}}$$

$$\Delta H = (331 + 498) \frac{\text{kJ}}{\text{mol}} - (401 + 431) \frac{\text{kJ}}{\text{mol}}$$

$$\Delta H = -3 \frac{\text{kJ}}{\text{mol}}$$

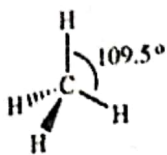
Question Number 83. Correct Option a

Explanation
 Secondary pollutants are generated by chemical interactions in the atmosphere with the primary pollutants and normal atmospheric constituents

Question Number 84. Correct Option a

Explanation

The tetrahedral bond angle is $\theta = 180^\circ - \cos^{-1}(\frac{1}{3}) = 109.5^\circ$



Question Number 85. Correct Option d

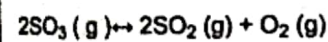
Explanation

The potassium in $K_2 [Co(CN)_6]$ acts as counter ion.

Question Number 86. Correct Option d

Explanation

$$k_p = k_c (RT)^{\Delta n}$$



$$\Delta n = (2 + 1) - (2) = 1; T = 1050 K$$

$$k_p = 0.0182 \left[(0.08206 \frac{L \cdot atm}{mol \cdot K}) (1050 K) \right]^1 = 1.57$$

Question Number 87. Correct Option d

Explanation

When an aldehyde is oxidized under alkaline condition, it forms a salt of carboxylic acid. That is because alkali metal involves.

Question Number 88. Correct Option b

Explanation

$\Delta H_{vaporization} = -\Delta H_{condensation}$:the opposite of vaporation (gain energy) is condensation(loss energy)

$\Delta H_{melting} = -\Delta H_{sublimation}$:the opposite of melting (loss energy) is freezing (gain energy)

$\Delta H_{system} = -\Delta H_{surroundings}$; $\Delta E_{universe} = \Delta E_{system} + \Delta E_{surroundings} = 0$; Therefore, $\Delta E_{system} = -\Delta E_{surroundings}$

$\Delta H_{ice} = -\Delta H_{fusion}$:the opposite of fusion (melting) (loss energy) is freezing(ice) (gain energy)

Therefore, the false statement is $\Delta H_{melting} = -\Delta H_{sublimation}$ since sublimate forms solid to gas.

Question Number 89. Correct Option c

Explanation

Increase in boiling point indicates a trend in electronegativity and size. The larger the surface area, the larger the force. The shorter the bond length due to electronegativity, the stronger the bond. These characteristics will have increase in boiling point.

Question Number 90. Correct Option b

Explanation

The most electronegative element among the choices is C and when it bonds to single atom O will form three bonds to form carbon monoxide. Therefore it has the shortest bond.

Question Number	91.	Correct Option	c
-----------------	-----	----------------	---

Explanation

HCl maintains gastric pH of stomach ranging from 2-3. Acidic pH may cause harm to the stomach lining, mucus protects stomach from being digested.

It activates pepsinogen to form pepsin, which digests proteins, in oxyntic cells of stomach wall. It softens food and kill microbes coming in stomach along with food.

Question Number	92.	Correct Option	d
-----------------	-----	----------------	---

Explanation

CFCs are most efficient in causing greenhouse effect.

Question Number	93.	Correct Option	a
-----------------	-----	----------------	---

Explanation

The reactants in cellular respiration are glucose and oxygen.

Question Number	94.	Correct Option	a
-----------------	-----	----------------	---

Explanation

ozone layer in the stratosphere of atmosphere prevents the UV rays to enter our environment. thus protecting us from harmful rays which may cause cancers.

Question Number	95.	Correct Option	a
-----------------	-----	----------------	---

Explanation

Explanation: lymphatic capillaries join together to form lymphatic vessels which empty into subclavian veins.

Question Number	96.	Correct Option	c
-----------------	-----	----------------	---

Explanation

gene annealing — complementary sequences of single-stranded DNA or RNA to pair by hydrogen bonds to form a double-stranded polynucleotide.

gene mutation — permanent alteration in the DNA sequence that makes up a gene

gene expression — process of genetic information flowing from DNA to RNA to proteins

gene therapy — biotechnological technique used for treatment of many diseases lately

Question Number	97.	Correct Option	d
-----------------	-----	----------------	---

Explanation

male reproductive system consists of

2 testes that produce sperms

Ducts that carry sperms

Glands that act as coordination system

Question Number	98.	Correct Option	b
-----------------	-----	----------------	---

Explanation

Ascaris is triploblastic i.e. it is derived from three embryonic cell layers — ectoderm, mesoderm, and endoderm

Question Number	99.	Correct Option	c
-----------------	-----	----------------	---

Explanation

Explanation: ADH increases water absorption to maintain BP, blood volume, and tissue water content. ADH production is stimulated when body there is less water in the body.

Question Number	100.	Correct Option	d
-----------------	------	----------------	---

Explanation

all the three methods are used to incorporate foreign gene into egg for getting transgenic animal.

Question Number 101. Correct Option a

Explanation

Interstitial cells are present between seminiferous tubules. These cells secrete testosterone which is essential for sperm production.

It also controls development of male secondary sex characters.

Question Number 102. Correct Option b

Explanation

Syphilis is caused by *Treponema pallidum*. It damages the reproductive organs, eyes bones joints, central nervous system, heart and skin.

Gonorrhoea is caused by *Neisseria gonorrhoea* and affects mucous membrane of urinogenital tract. If baby passes through the infected tract, it acquires serious eye infections. It is highly contagious through sexual contacts.

Question Number 103. Correct Option c

Explanation

During denitrification, some soil bacteria (*pseudomonas*) in the absence of oxygen break down nitrates releasing nitrogen back into the atmosphere, so here nitrogen is of no use to plants.

Question Number 104. Correct Option a

Explanation

Lenticels are present on stem of the plant. They are small pores. Here transpiration takes place.

Cuticular and stomatal transpiration takes place through leaves.

Question Number 105. Correct Option c

Explanation

Explanation: It is technique of breaking kidney stones inside kidneys, ureters, and urinary bladder

Question Number 106. Correct Option d

Explanation

None of the following has any function in the human body. So they are called vestigial organs.

Question Number 107. Correct Option c

Explanation

by definition.

it is important in cloning of transgenic animals. the $2n$ nuclei are taken from cumulus cells which are cloned.

Question Number 108. Correct Option a

Explanation

Explanation: fact

Peritoneum covers most of the intra-abdominal organs, and is composed of a layer of mesothelium supported by a thin layer of connective tissue.

Question Number 109. Correct Option b

Explanation

Cerebral hemispheres communicate through corpus callosum, which is a bundle of axons.

Question Number 110. Correct Option c

Explanation

secretin activates hepatic and pancreatic cells to produce secretions. Secretin is produced by intestinal mucosa on the entry of acidic food.

Secretin also inhibits gastric secretions.

Question Number 111. Correct Option c

Explanation

Prosthetic groups are cofactors that bind tightly to proteins or enzymes. They can be organic or metal ions.

Apo-enzyme is an inactive enzyme which is activated through the binding of co-factor or co-enzyme.

Activators are molecules that increase the activity of enzyme.

Question Number	112.	Correct Option	a
-----------------	------	----------------	---

Explanation
monosaccharide is the simplest carbohydrate class. sugars belonging to this group cannot be hydrolysed.

Question Number	113.	Correct Option	b
-----------------	------	----------------	---

Explanation
air is the major reservoir of nitrogen. nitrogen makes up 78% of gases in the air.

Question Number	114.	Correct Option	d
-----------------	------	----------------	---

Explanation
During amino acid activation, the amino acids are attached to their corresponding tRNA. The coupling reactions are catalysed by aminoacyl-tRNA synthetases.

Question Number	115.	Correct Option	c
-----------------	------	----------------	---

Explanation
Pyrogen is the substance produced by bacterium, it is responsible for displacing set point of hypothalamus above normal body temperature.

Hypothalamus --- Control center for body temperature:

- It is also known as body's thermostat as it is involved in control of the body temperature.
- Hypothalamus is the portion of the brain which receives constant information about the temperature of the blood and temperature of the surroundings.
- It can detect the temperature of the blood through its thermo-receptor cells.
- This temperature is called core temperature.
- Hypothalamus also receives information about the temperature change from the skin.

Skin is the receptor for temperature changes in the external environment, so it sends impulses to the hypothalamus.

Core temperature of humans:

37°C for humans
but it may fluctuate within narrow range

Question Number	116.	Correct Option	c
-----------------	------	----------------	---

Explanation
Explanation: fact, this theory explains the movement of solute or organic molecules

Question Number	117.	Correct Option	a
-----------------	------	----------------	---

Explanation
fact. they are found only in animal cells, located together near the nucleus in the centrosome, a granular mass that serves as an organizing center for microtubules in animal cells.

Question Number	118.	Correct Option	d
-----------------	------	----------------	---

Explanation
Guard cells are epidermal cells epidermal cell that can open the stomata to take in or release oxygen, carbon dioxide and water, consequently enabling these molecules to travel through the stomata.

Question Number	119.	Correct Option	a
-----------------	------	----------------	---

Explanation
Microbicidal agents kill bacteria
microbistatic agents inhibit growth of bacteria

Question Number	120.	Correct Option	a
-----------------	------	----------------	---

Explanation
Autotrophs are organisms that are able to prepare their own food. These include plants.

Question Number	121.	Correct Option	a
-----------------	------	----------------	---

Explanation
polymerase chain reaction is carried out in test tube not in vivo. All the other options are correct about PCR.

Question Number 122. Correct Option d

Explanation
 foreign genes are introduced into immature plant embryo or protoplast in order to produce transgenic plant.
 protoplasts are treated with an electric current which produces small holes in the cell membrane through which foreign DNA can pass. the protoplasts are suspended in a liquid containing foreign DNA when electric current is applied.

Question Number 123. Correct Option c

Explanation
 by definition

Question Number 124. Correct Option c

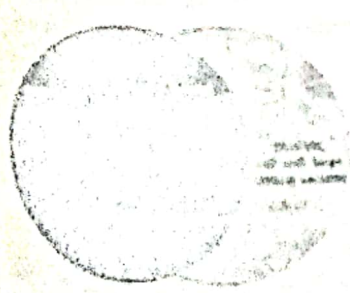
Explanation
 fact

Question Number 125. Correct Option c

Explanation
 Fact

Question Number 126. Correct Option b

Explanation
 Plastids are double membrane bound organelles found in the cells of plants and algae. Plastids are the site of manufacture and storage of important chemical compounds used by the cell.
 Plastids often contain pigments used in photosynthesis, and the types of pigments present can change or determine the cell's colour.



Question Number 127. Correct Option d

Explanation
 Heat shock protein 60 (HSP60) is a mitochondrial chaperonin that helps in transportation and refolding of proteins from the cytoplasm into the mitochondrial matrix.
 Hsp70 are central components of the cellular network of molecular chaperones and folding catalysts. They assist a large variety of protein folding processes in the cell.

Question Number 128. Correct Option c

Explanation
 Explanation: acinus is a region of the lung supplied with air from one of the terminal bronchioles. It is the system of alveoli in 1. Alveolar sacs 2. Alveolar ducts 3. Respiratory bronchioles

Question Number 129. Correct Option a

Explanation
 Explanation: the branches of lymph capillaries in the villi of large intestine are called lacteals.

Question Number 130. Correct Option a

Explanation
 A two-point test cross can be used to determine the recombinant frequency between 2 linked genes.
 A test cross involves crossing of phenotypically dominant individual with a phenotypically recessive individual to determine the recombinant frequency and zygosity of the inherited genes.

Question Number 131. Correct Option c

Explanation
 Macromolecules are molecules made of smaller subunits.
 Polymers are macromolecules made of repeating subunits. For example, a protein is both a macromolecule and a polymer since it is made of repeating units of amino acids.
 A tryglyceride is a macromolecule but not a polymer

Question Number 132. Correct Option d

Explanation
 Cell that have had their cell wall removed are called protoplasts.

Question Number 133. Correct Option a

Explanation

bacteria are also decomposers like fungi. they also play role in ecological field by decomposing complex material to simpler material.

Question Number 134. Correct Option d

Explanation

fact

Question Number 135. Correct Option a

Explanation

The inner membrane of mitochondria is folded to form finger like structures called cisternae.

crestae are partial partitions in a mitochondrion formed by infolding of the inner membrane

Question Number 136. Correct Option b

Explanation

osmotic lysis occurs when a cell bursts due to an osmotic imbalance that has caused excess water to diffuse into the cell. The presence of a cell wall prevents osmotic lysis so it only occurs in animal and protozoa cells which do not have cell walls.

Question Number 137. Correct Option c

Explanation

DNA ligase facilitates the joining of DNA strands together by catalyzing the formation of a phosphodiester bond. it is not involved in mapping human chromosome.

Question Number 138. Correct Option a

Explanation

Amylopectin is a branched polymer.

There are two types of glycosidic bonds in amylopectin: 1,4 and 1,6.

The 1,4 links are the same as in amylose. In addition some glucose molecules have a glycosidic link from carbon atom number 6 to carbon atom number 1 in a new glucose molecule. This produces a branch point in the amylopectin molecule.

In amylose, the glucose monomers are linked by 1,4 glycosidic bonds. . This produces an unbranched chain of glucose which then folds up to form a coil or helix.

Starch is composed amylose and amylopectin.

Question Number 139. Correct Option a

Explanation

Measles develop immunity and they do not appear again.

Question Number 140. Correct Option b

Explanation

Darwin explained evolution through the natural selection.

Question Number 141. Correct Option a

Explanation

Tay-Sachs disease is a inherited disorder that progressively destroys nerve cells (neurons) in the brain and spinal cord. it is caused due to the mutation in the gene which is responsible for producing enzyme involved break down of fatty substance.

Question Number	142.	Correct Option	d
Explanation			
Pinocytosis	intake of liquid material across the cell membrane		
phagocytosis	intake of solid material across the cell membrane		
endocytosis	the taking in of matter by a living cell by invagination of its membrane to form a vacuole.		
exocytosis	a process by which the contents of a cell vacuole are released to the exterior through fusion of the vacuole membrane with the cell membrane		

Question Number	143.	Correct Option	d
Explanation			
The final acceptor of electrons in the electron transport chain during aerobic respiration is molecular oxygen although a variety of acceptors other than oxygen such as sulfate exist in anaerobic respiration			

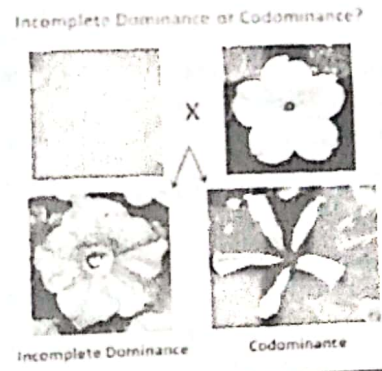
Question Number	144.	Correct Option	c
Explanation			
Sphincters of digestive system			
Name	Location		
Cardiac sphincter	Between esophagus and stomach		
Pyloric sphincter	Between stomach and duodenum		
Ileocolic sphincter	Between ileum and large intestine		

Question Number	145.	Correct Option	b
Explanation			
antibiotic misuse results in the development of resistance in pathogens which are no longer affected by antibiotics and become more stronger.			

Question Number	146.	Correct Option	c
Explanation			
Seed is the part of mature plant. Its cells do not undergo meiotic cell division to produce haploid cells. Sperm and egg cells are haploid as they are the product of meiosis and they join together to give birth to the new diploid individual.			

Question Number	147.	Correct Option	a
Explanation			
fact In the lytic cycle, the phage replicates and lyses the host cell. In the lysogenic cycle, phage DNA is incorporated into the host genome, where it is passed on to subsequent generations			

Question Number	148.	Correct Option	c
Explanation			
when two different phenotypes produce offspring with a third phenotype in which both of the parental traits appear together, this phenomenon is called co-dominance. when two different phenotypes produce offspring with a third phenotype in which the expressed physical trait is a combination of the phenotypes of both allele, this is called incomplete dominance.			



Question Number	149.	Correct Option	b
Explanation			
Stomach wall is composed of connective tissues and smooth muscles. It has 3 principle layers. 1. Outer layer is composed of connectiv. tissue 2. Middle layer is composed of smooth muscles 3. Inner layer is composed of connective tissue containing many glands This layer is also called mucosa.			

Question Number 150. Correct Option c

Explanation
 follicle cells after releasing egg convert into yellow structure called corpus luteum which produces progesterone. It develops endometrium and makes it receptive for the implantation of zygote.

Question Number 151. Correct Option a

Explanation
 Application of totipotent
 Steward developed a complete carrot plant from the tiny piece of phloem. he also provided sugars, minerals, and vitamins. he added coconut milk. later, it was discovered that coconut milk contains cytokinins.

Question Number 152. Correct Option c

Explanation
 Explanation: all of the above are functions of lungs directly or indirectly except support and protection of organs.

Question Number 153. Correct Option d

Explanation
 secondary structure of proteins forms helix. alpha helix has 3.6 amino acids in each turn. the helical structure is kept by hydrogen bonds among amino acids in successive turns of the spiral.
 beta pleated sheet is another form of secondary structure that is formed by folding back of polypeptide.

Question Number 154. Correct Option d

Explanation
 Liver fluke, also known as Fasciola, is an endoparasite that lives in the bile duct of mammals.

Question Number 155. Correct Option b

Explanation
 Transpiration pull is a type of suction which pulls water from roots to leaves.

Question Number 156. Correct Option a

Explanation
 hydrophobic amino acids are water repellent. to make the protein stable, hydrophilic amino acids should be outwards and hydrophobic should be inwards.

Question Number 157. Correct Option d

Explanation

Bolus	Chyme
Food that is mashed in the mouth	Repeatedly digested food in the stomach
Alkaline	Acidic
Teeth and saliva act on food to form bolus	Stomach digests food by peristalsis to form chyme
Soft round ball of chewed food	Liquefied food
Food going from mouth to stomach	Food going from stomach to small intestine

Question Number 158. Correct Option b

Explanation
 Pili are hollow, non helical appendages that are smaller than flagellum and are involved in conjugation during mating.
 They are present only in gram negative bacteria.
 They are composed of a protein called pilin.
 They are also involved in attachment of bacterium to the surface.

Question Number 159. Correct Option c

Explanation
 Basic components of cell wall include cell membrane, nucleus, and cytoplasm. Cell membrane supports and protects the organelles. Nucleus contains the genetic material necessary for reproduction whereas, cytoplasm holds the cell organelles.

Question Number	160.	Correct Option	d
-----------------	------	----------------	---

Explanation

fact. they go all the way through phospholipid bilayer and have pores through which molecules can pass.

extrinsic proteins are present only outside. they have often sugar chains that identify cells as friendly for adhesion or hormone binding.

Question Number	161.	Correct Option	d
-----------------	------	----------------	---

Explanation

- It is a past perfect continuous tense. In such a sentence, we use verb+ing (verb in the sentence is *wait+ing*) after had been/have been.

- Waited is used in simple past tense. For example: *He waited for you for so long.*

- Waits is appropriate to use if the subject is singular in simple present tense. For example: *He waits for you everyday.*

- Waiting or any verb+ing is appropriate to use in present, past, future perfect continuous tense.

Hence, *waiting* is the right choice.

Question Number	162.	Correct Option	a
-----------------	------	----------------	---

Explanation

- Homogenous means of same kind.

- Similar means having a likeness.

- High quality implies something with exceptional attributes.

- Expensive means to have a high price.

- Durable is anything which last longer and is not easily perishable.

Therefore, option A is the most appropriate.

Question Number	163.	Correct Option	a
-----------------	------	----------------	---

Explanation

- Preposition "with" is used to connote being involved or being together.

Usage: *I will come with you.*

- Preposition "along" is used with nouns such as roads, river etc.

Usage: *He walked along the river.*

- Preposition "by" is used to indicate proximity.

Usage: *My daughter was standing by my side.*

- Preposition "over" can be used to explain the movement or position.

Usage: *The sign board over the door says push.*

Therefore, option A is the most appropriate.

Question Number	164.	Correct Option	b
-----------------	------	----------------	---

Explanation

This is a past perfect continuous tense and we use had been in it. Was is used in past indefinite tense. Has been/have been is used in present perfect continuous tense. Hence had been is the suitable answer.

Question Number	165.	Correct Option	b
-----------------	------	----------------	---

Explanation

- Akbar and Saleem are two separate subjects joined by the conjunction 'and', therefore use plural form of the verb, 'are'.

- Is used with a single subject.

- Both is used to identify two people or things as together but it must be followed by a helping verb (example of helping verb: *are*).

- Along means from one end to another.

Hence, are is the best choice.

Question Number	166.	Correct Option	d
-----------------	------	----------------	---

Explanation

- Preposition "upon" describes an action immediately after something happens or something is done.

- Preposition "after" implies later than.

- Preposition "until" indicates an event which needs to be completed before another action is taken.

- Preposition "since" is used when starting period is given.

Therefore, until is an appropriate word to fill in the blank.

Question Number	167.	Correct Option	b
-----------------	------	----------------	---

Explanation

- Preposition About is used in connection with description of plans.

- Preposition With is used to describe the presence of someone.

- Preposition Into indicates movement or transformation towards something.

- Preposition In shows location or position inside something.

So, about is the most suitable preposition to fill in the blank.

Question Number	168.	Correct Option	b
-----------------	------	----------------	---

Explanation

- Pack is a collective noun and is treated as a singular here because when members of collective noun are in agreement, it is treated as one, a singular noun.

For example (in case of agreement among the members of collective noun):

1) *The committee has reached consensus.*

- In the sentence above, all the members of the committee are in agreement, therefore, treat it as a singular and use 'has'.

2) *The committee have failed to reach a consensus.*

- In the sentence above all the members of committee are at disagreement, therefore, treat it as a plural and use have. As there are more than one outcomes.

Similarly, in the question above wolves are moving together, there is an agreement among the members of collective noun.

Hence, move is the right answer.

- Move is used with plural noun. Moved is the second form of the verb and it is normally used in simple past tense. Moves is used with a singular noun. Shall move is used in the case of future perfect continuous tense.

Question Number	169.	Correct Option	d
-----------------	------	----------------	---

Explanation

- Which is used to refer to things

Usage: *Which laptop is mine?*

- Whom is used to refer to the object of verb or preposition.

Usage: *To whom do you wish to meet.*

- Whose is used to ask the ownership of a belonging.

Usage: *Whose bag is this?*

- Who is used refer to people.

Usage: *Who is this man standing outside my office?*

Hence, Who is the right answer.

Question Number 170. Correct Option a

Explanation

- Edifying means to educate or enlighten one.
- Discouraging means to degrade a person.
- Enlighten means to educate or guide one.
- Path making means to make a way toward something.
- Helpful means the one who is helping others without any reward in return.

So, enlightening is the most suitable synonym to edifying.

Word	Synonym	Antonym
Edifying	improve, teach	learn
Enlighten	illuminate, civilize	misguide, mislead
Discouraging	bleak, dismal	heartening, inspiring

Question Number 171. Correct Option b

Explanation

- Preposition "at" is use to point out specific time.
Usage: *I will meet you at 1pm.*
 - Preposition "on" is use to express a surface of something.
Usage: *I have placed the knife on the kitchen table.*
 - Preposition "in" is used for unspecific time during a day, a month, a year.
Usage: *Put your book in your bag.*
 - Preposition "over" can be used to explain the movement or position.
Usage: *He held umbrella over himself while it was raining.*
- Hence, on is the most appropriate preposition to fill in the blank.

Question Number 172. Correct Option b

Explanation

- The question is stated in future perfect tense. Future perfect tense is used when we refer to an action which will be completed in future. A sentence in future perfect tense involves the use of *will+have* and past participle of verb (it is a form of verb usually formed by adding 'ed' at the end, for example, reached).
 - Had is used in past perfect tense. Past perfect tense implies that an action has been accomplished in some time before. For example: *I had met him somewhere.*
 - Have is used in present perfect tense. Present perfect tense uses *have/has*, plus past participle of verb. For example: *He has played cricket before.*
- Hence, will have is the correct answer.

Question Number 173. Correct Option c

Explanation

- This is a future indefinite tense and we use *will/shall* in it. *Will* be/shall be is used in a future continuous tense. *Shall* is used with *I* and *we*. So, *shall* is the suitable answer

Question Number 174. Correct Option c

Explanation

- When is used as a conjunction or as a question word.
Usage: *When will you come back?*
 - If is used in a condition of whether something happens or not.
Usage: *I will come to Lahore, if he invites me.*
 - After is used when a particular time has passed or when an action has ended.
Usage: *Your turn will come after me.*
 - As is used for comparison or to refer to magnitude of something.
Usage: *He runs fast like a tiger.*
- Hence, after is the suitable answer.

Question Number 175. Correct Option d

Explanation

- Gradient means a surface that departs from the horizontal axis.
Sample sentence: *This hill is difficult to climb, it has a steep gradient.*
 - Hang means to fasten something from top and let the lower part free to move.
Sample sentence: *I hanged my clothes on the rack.*
 - Decline means to grow worse.
Sample sentence: *Poor economic policies lead to decline in business activities.*
 - Slope means to give a slanting direction or to move from a horizontal axis.
Sample sentence: *The wall is built at a slope of 20 degree.*
 - Dent means to make a depression into.
Sample sentence: *Did you have an accident? There is a dent in the door of your car.*
- So the suitable match to gradient is slope.

Question
Number

176.

Correct
Option

d

Explanation

A narcissist is an overly selfish person.

A Humble person is the one who is very polite and helpful.

A Religious person is he who performs religious rituals and abstain from sins.

A Prison inmate is a criminal inside the jail.

An Egocentric person is he who is overly self centered .

Therefore, option D is the most appropriate.

Question
Number

177.

Correct
Option

b

Explanation

- Deferment is to postpone.

Sample sentence: *My marriage plan is deferred by my family.*

-Rush means to move fast.

Sample sentence: *We rushed towards the mall to buy grocery.*

- Delay means to act later than planned.

Sample sentence: *We have delayed our trip to Naran due to bad weather.*

-Hurry means to move at high speed.

Sample sentence: *I was in a hurry to leave the office as a result i forgot my laptop there.*

-Activate means to start.

Sample sentence: *Shop keeper asked me to activate my mobile.*

Hence, delay is the most suitable answer.

Question
Number

178.

Correct
Option

Explanation

The sentence involves the use of a collective noun, committee. If the parts of collective noun are in agreement, then it is dealt as a singular. In case of disagreement, it is treated as a plural.

In the clause above, the team members are in agreement as the report can only be issued if all members of a committee agree with it. Therefore, treat the collective noun as singular.

Has is used with singular nouns. Have is used with plural nouns.

Will have can used in future perfect continuous tense. Future continuous tense implies that an action will occur in the future.

Will is used in simple future tense.

Hence, has is most appropriate word to fill in the blank.

Question
Number

179.

Correct
Option

b

Explanation

-This is a future perfect tense and we will use shall have as shall is used with I and We.

-Had is used in past perfect tense. For example: *I had lunch at 2pm.*

-Will have is used in future perfect tense but not with I. For example: *I will have spent all my money by next month.*

- Have is used in present perfect tense. For example: *I have a fancy dress.*

Question
Number

180.

Correct
Option

c

Explanation

- As this is a present perfect tense and we use has/have and 3rd form of verb.

- Live is the 1st form of verb.

- Have lived is used in present perfect tense with the subject being plural.

- Had lived is used in past perfect tense.

Therefore, the suitable answer is have lived.