2016

PRACTICE SOLVED PAPER-4

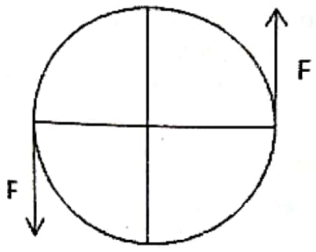
1. No significant diffraction of light will occur if
   a. wavelength of light is smaller than obstacle or aperture of the slit
   b. wavelength of light is larger than aperture of the slit
   c. light is monochromatic
   d. interference occur at slit

2. Speed of sound in hydrogen is _____ times than speed in helium.
   a. 1/2 c. 1/4
   b. 2 d. 4

3. An inertial frame of reference is one whose
   a. velocity is zero
   b. acceleration is zero
   c. acceleration is uniform
   d. gravity zero

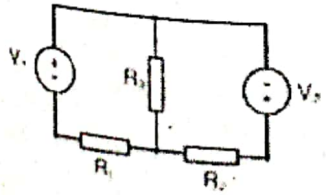
4. Error occurs due to uncontrolled natural environmental impacts like air resistance, humidity, ambient temperature etc. is called
   a. round off error c. random error
   b. systematic error d. truncation error

5. A body in equilibrium does not have



   a. Velocity
   b. Momentum
   c. Acceleration
   d. Speed

6. What is the value of current through resistor R_2?



   a. $I_2 = \frac{I_1R_3+V_2}{R_1+R_3}$
   b. $I_2 = \frac{I_1R_3+V_2}{R_2+R_3}$
   c. $I_2 = \frac{I_1R_3+V_2}{R_1+R_2}$
   d. $I_2 = \frac{I_1R_1+V_1}{R_2+R_3}$

7. What is the decrease in kinetic energy when the linear momentum of the body decreases by 50%?
   a. 25%
   b. 50%
   c. 75%
   d. 125%

8. Monochromatic coherent sources of light emit light waves of
   a. constant phase difference
   b. same wavelength
   c. varying phase difference
   d. both a & b

9. The ratio of specific heat of air at constant pressure and specific heat at constant volume is
   a. greater than one
   b. less than one
   c. one
   d. infinite

10. The point on stress-strain curve up to which Hook's law holds, is called
    a. Ultimate tensile strength
    b. proportionality limit
    c. None of these
    d. yield point

11. Difference between progressive and stationary wave is that
    a. progressive waves form nodes and anti-nodes based on the wavelength
    b. progressive wave has equal frequency over all points
    c. progressive wave has equal amplitude over all points
    d. both waves are same in most of the cases

12. A metallic rod is stretched by applying a pull at its ends, then
    a. diameter of rod will increase
    b. length of rod will decrease
    c. both will remain same
    d. length will increase but diameter will decrease

13. What is percent uncertainty in velocity when displacement and time are (20 ± 1) meters and (100 ± 2) seconds respectively.
    a. 3%
    b. 5%
    c. 7%
    d. 9%

14. Which of the following statement is wrong?
    a. The deformation of the bar per unit length in the direction of the force is called linear strain
    b. The bulk modulus is the ratio of linear stress to the linear strain
    c. The ratio of change in volume to the original volume is called volumetric strain
    d. All are correct

15. Dimension of inertia is
    a. [M]
    b. $[MM^{-1}]$
    c. $[LT^{-1}]$
    d. $[MLT^{-2}]$

16. Two balls A and B of equal masses are thrown horizontally from a certain height with velocities 5m/s and 10m/s respectively. Which ball will hit the ground first?
    a. A
    b. B
    c. both will hit at same time
    d. can't be predicted

17. Jet propulsion obeys
    a. Newton's 1st law of motion
    b. Newton's 2nd law of motion
    c. Newton's 3rd law of motion
    d. None of these

18. Two substances A & B have half-life of 20min and 90min respectively. 2kg of A is physically mixed with 5kg of B. Find the total amount of mixture left after 3 hours.
    a. 343/234
    b. 346/278
    c. 331/246
    d. 321/256

19. Which of the following is conserved in all types of collisions
    a. momentum
    b. total energy
    c. kinetic energy
    d. both a & b

20. For a given wave speed, frequency is _____ to wavelength.
    a. inversely proportional
    b. equals
    c. directly proportional
    d. All of these

21. If the density of a gas is doubled keeping other parameter constant then sound velocity become _____ times.
    a. $\sqrt{2}$
    b. $\sqrt{2}$
    c. 1/ 2
    d. 1/2

22. In which combination of resistors the value of equivalent resistance is less than the value of any individual resistor in the circuit.
    a. parallel
    b. either series or parallel
    c. series and parallel
    d. series

23. Which of the following is the source of monochromatic light?
    a. sunlight
    b. Mercury flame
    c. Neon bulb
    d. sodium chloride flame

24. Two bars of different materials and same size are subjected to the same tensile force. If the bars have unit elongation in the ratio of 2:5, then the ratio of modulus of elasticity of the two materials will be
    a. 5:2
    b. 2:4
    c. 2:5
    d. 4:3

25. Chose the correct equation

a. ${}_0^1n \rightarrow {}_1^1P + {}_{-1}^0e$
b. ${}_Z^AX \rightarrow {}_{Z-2}^{A-4}Y + {}_2^4He$
c. ${}_0^1n \rightarrow {}_1^1H + {}_{-1}^0e$
d. all of above

26. The radioactive isotope which is used to study circulation of blood?

a. sodium-24
b. sodium-23
c. cobalt-60
d. carbon-14

27. Waves produced on the surface of water in a lake are

a. stationary waves
b. Longitudinal waves
c. all of these
d. Transverse waves

28. Time period and wavelength of a wave are 2s and 30cm respectively. Find its speed in m/s?

a. 0.1
b. 1
c. 0.6
d. 0.15

29. Which of the following motion of the molecules is not considered while deriving equation

$$P = \frac{2}{3}N_o < \frac{1}{2}mv^2 >$$

a. vibrational motion
b. linear motion
c. rotational motion
d. both a & c

30. Binding energy per nucleon with increase in atomic mass

a. Increase first then decrease
b. Decrease first then increase
c. remains constant
d. increase

31. The simplest form of matter is:

a. Liquid
b. Solid
c. Gas
d. Plasma

32. Term P/ρg is called

a. Gauge pressure
b. Potential energy
c. Pressure work
d. Pressure head

33. What is the pressure exerted by a gas if it has only two-dimensional freedom?

a. $P = \frac{1}{2}\rho < v^2 >$
b. $P = \rho < v^2 >$
c. $P = \frac{1}{3}\rho < v^2 >$
d. None of the above

34. Chose the correct statement.

a. three dimensional image generation by laser is called Holography
b. Laser is potential energy source for inducing fusion reaction
c. Laser can be used for telecommunication along optical fibre
d. All of these

35. Which of the following is the example of perfectly polarized light?

a. light reflected from water surface
b. light reflected from mirror
c. laser beam
d. torch light

36. Which of the following factor affect the penetration power of X-rays?

a. current
b. velocity
c. anode potential
d. frequency

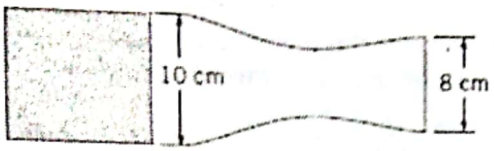
37. Flow will be laminar if

a. inertial forces dominates viscous forces
b. viscous forces dominates inertial forces
c. inertial forces and viscous forces are equal
d. None of these

38. Stokes' law gives quantitative measure of

a. fluid viscosity
b. fluid velocity
c. viscous drag force
d. all of these

39. The ignition rocket engine, just like in the figure, has a diameter of 10cm and a loop nozzle at exit of 8 cm in diameter. The density of the exhaust is 1750 kg/m3, and the surface reverts with velocity of 1 cm/s. Exhaust has an absolute pressure of 10kPa and 2200°C temperature. The gas constant of gases at exit is 415 J/kg K. What is the value of velocity of gases at exit?



a. 2000 m/s
b. 2900 m/s
c. 3500 m/s
d. 4100 m/s

40. Uses of X-ray deflection includes
a. crystallographic structure, and grain size of crystalline materials
b. determining the stains in materials
c. determining structure of biological molecules
d. all of these

41. Pressure exerted by gas is written as
a. $P = \frac{1}{3}\rho < v^2 >$
b. $P = \frac{1}{3}\frac{mN}{v} < v^2 >$
c. $P = \frac{2}{3}\frac{mN}{v} < K.E >$
d. All of these

42. If the potential difference inside the X-ray tube is increased then frequency of X-rays
a. remains constant
b. become zero
c. decrease
d. increases

43. A telescope is made of an objective of focal length 32cm and an eye piece of 8cm. Find the angular magnification when both lenses are convex.
a. 5
b. 6
c. 4
d. 7

44. By increasing temperature of a gas by 1oC, the volume increases by:
a. 2 times of initial volume
b. 273 times of initial volume
c. 1/2 times of initial volume
d. 1/273 times of initial volume

45. The Bernoulli's equation is based on the assumption that
a. the velocity of flow is uniform across any cross-section of pipe
b. there is no loss of energy of the liquid flowing
c. no force except gravity acts on the fluid
d. all of the above

46. What of the following statement of Avogadro's hypothesis ic true?
a. The volume of the gas is directly proportional to the density of a gas.
b. The atomic or molar mass is directly proportional to the density of a gas.
c. The varying pressure is directly proportional to the density of a gas.
d. The varying temperature is inversely proportional to the density of a gas

47. Which has strongest bond?
a. F – F
b. Cl – Cl
c. Br – Br
d. I – I

48. Which of the following is not true about radicals?
a. They are formed from homolysis.
b. They exhibit octet of electrons.
c. They are reactive and unstable.
d. They are reactive intermediate with single unpaired electrons.

49. Is it likely for an atomic element to have isotopes with different number of protons?
a. No. It is not possible
b. Yes. This expresses the true meaning of isotopes.
c. It only depends on the number of electrons.
d. None of the above

50. Calculate the mass of carbon dioxide required to inflate a balloon to a certain volume at 30°C if 5 g of helium is required to inflate the balloon to half the volume at 25°C.
a. 20.2 g
b. 108.18 g
c. 1.09 kg
d. 382 g

51. An alkane fuel is burnt in a furnace giving a flue gas. In orsat analysis, it is found out that the composition of the fuel contains 32.4 mols of H and 10.8 mols of C. Determine the alkane compound.
a. Methane
b. Ethane
c. Propane
d. Hexane

52. Ammonia is widely used to manufacture fertilizers and explosives. Haber-Bosch process is used to produce tremendous amount of ammonia out from nitrogen gas and hydrogen gas under high pressure.

$N_2(g) + 3H_2(g)\ 2NH_3(g)\ \Delta H^o = -92.6\frac{kJ}{mol}$

If we apply Le Chatelier's principle on this reaction, which of the following statement(s) is/are true?

i. Adding more $N_2(g)$ and $H_2(g)$ will shift the reaction to right
ii. Extracting more ammonia out will shift the reaction to the left
iii. Increasing the temperature will shift the reaction to the right
iv. Increasing the pressure of the vessel by adding Argon gas will have no change in the direction of reaction
v. Introducing Al_2O_3 as catalyst will shift the reaction to the left

a. ii
b. i and ii
c. i and iv
d. D. ii, iii, and v

53. What is the balance redox equation of in acidic form:

$MnO_4^-(aq) + CH_3CH_2OH(aq) \rightarrow CH_3CH(aq) + MnO_2(s)$

a. $2MnO_4^-(aq) + 3CH_3CH_2OH(aq) + 2H^+ \rightarrow 3CH_3CHO(aq) + 2MnO_2(s) + 2OH^-$

b. $2MnO_4^-(aq) + 3CH_3CH_2OH(aq) + 2H^+ \rightarrow 3CH_3CHO(aq) + 2MnO_2(s) + 4H_2O$

c. $2MnO_4^-(aq) + 3CH_3CH_2OH(aq) \rightarrow 3CH_3CHO(aq) + 2MnO_2(s) + 3CH_3CHO(aq) + 2MnO_2(s) + 2H_2O + 2OH^-$

d. $2MnO_4^-(aq) + 3CH_3CH_2OH(aq) + 2H_2O \rightarrow 3CH_3CHO(aq) + 2MnO_2(s)$

54. Markonikov's rule is

a. The H atom bonds to the less substituted carbon atom
b. The H atom bonds to the more substituted carbon atom
c. The addition of HX to a symmetrical alkene
d. It is to form unstable carbocation

55. In the following experiments, calculate the rate constant of the reaction:

Experiment No.	Initial [X]	Initial [Y]	Initial Rate, M/s
1	0.200	0.200	1.1×10^5
2	0.400	0.200	4.4×10^5
3	0.200	0.600	3.3×10^5

a. 5.545×10^{-3}
b. 1.375×10^{-3}
c. 2.265×10^{-3}
d. 2.5×10^{-3}

56. The following choices are the mechanism of nucleophilic acyl substitution except

a. The nucleophile attacks the carbonyl group.
b. Loss of leaving group
c. Formation of tetrahedral intermediate
d. Formation of carboxylate ion

57. Approximately four billion years ago, Earth's atmosphere was composed of methane, ammonia, water and very little amount of oxygen. But now Earth's troposphere is composed mainly of oxygen and nitrogen. Why the gases in the atmosphere today were not like before?

a. Volcanic activity released carbon dioxide as major source for photosynthesis.
b. Primitive organisms used light to break down carbon dioxide to carbon and oxygen.
c. Photodecomposition of water vapor via UV light.
d. All of above

58. What is heat?

a. It is a temperature.
b. It is an energy
c. It is a measure of average kinetic energy of all the atoms in a system.
d. All of the above

59. Arrange the following in the increasing strength as reducing agent:

i. $Br_2(l) + 2e^- \rightarrow 2Br^-$ $E^0 = +1.07V$

ii. $2H^+(aq) + 2e^- \rightarrow H_2$ $E^0 = 0V$

iii. $Hg^{2+} + 2e^- \rightarrow Hg(l)$ $E^0 = +0.86V$

iv. $I_2(s) + 2e^- \rightarrow 2I^-$ $E^0 = +0.53V$

a. i < iii < iv < ii
b. ii < iv < iii < i
c. ii < i < iii < iv
d. none of the above

60. What is the product when magnesium is reacted with methyl bromide in the presence of diethyl ether?

a. Diethyl magnesium bromide
b. Methyl magnesium and bromine gas
c. Magnesium bromide and methane
d. Methyl magnesium bromide

61. Nucleophiles are

a. Reactants that provides a pair of electrons to form a covalent bond
b. Reactants that accepts a pair of electrons to form a covalent bond
c. Reactants that are subsets of acidity.
d. Reactants that form cleaves.

62. Which of the following is false about concentration-time graph?

a. It is a tool to track the change in concentration over time.
b. It shows where the reaction starts.
c. It follows a pattern called gradient which is defined as the change in y-axis over change in x-axis.
d. It shows where the reaction stops.

63. Which of the following acid derivative is the most reactive towards aqueous NaOH

a. acid halide
b. ester
c. amide
d. acid anhydride

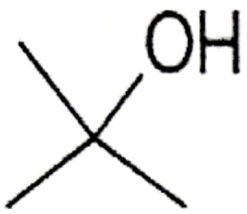
64. Which of the following tests gives a color change for ketone?

a. Fehling's test
b. Tollen's test
c. Schiff's test
d. Brady's test

65. A gas occupying a volume of 800 mL at a pressure of 1.5 atm is allowed to expand at constant temperature until its pressure reads 0.8 atm. What is the final volume?

a. 750 mL
b. 1200 mL
c. 1500 mL
d. 2200 mL

66. Name this compound:



a. 2-methyl-2-butanol
b. 1-methyl-2-ethanol
c. 2-methyl-2-ethanol
d. 2-methyl-2-propanol

67. Which of the following does not mainly contribute to acid rain formation?

a. Burning coals
b. Volcanoes
c. Sulfuric Acid Plant
d. Smelting Plant

68. Calculate the number of atoms in body centered cubic cell.

a. 8 c. 3
b. 9 d. 2

69. What is the molecular shape of water?

a. Trigonal Planar
b. Trigonal Bipyramidal
c. Linear
d. Tetrahedral

70. What is the geometric structure of a complex ion with a coordination number 6

a. Square planar
b. Octahedral
c. Tetrahedral
d. Trigonal bipyramidal

71. Calculate the half-life of dinitrogen pentoxide if it has a rate constant of 2.6×10^{-4}/s to decompose to nitrogen dioxide and oxygen gas

a. 2665.95 minutes
b. 0.74 hour
c. 44.43 seconds
d. 3600 seconds

72. What are the products formed when ester and water are reacted in a presence of a catalyst?

a. Alcohol and hydrogen gas
b. Salt and alcohol
c. Carboxylic acid and alcohol
d. Aldehyde and alcohol

73. What is the oxidation number of oxygen in OF_2?

a. -2 c. +1
b. 0 d. +2

74. Determine the % mass composition of oxygen and nitrogen in dry air?

a. 79.05% N_2, 20.95% O_2
b. 75.89% N_2, 24.11% O_2
c. 79% N_2, 21% O_2
d. 76.7% N_2, 23.3% O_2

75. Which of the following has the strongest intermolecular force?

a. Ion-dipole force
b. Hydrogen bonding
c. Dipole-dipole force
d. Ion-induced force

76. Which of the following is false about common ion effect?

a. If the common ion is present in a solution, the ionization of weak acid become less
b. If the common ion is present in a solution, more H+ ions are produced.
c. If the common ion is present in a solution, the equilibrium shifts from right to left.
d. The pH value of the solution with common ion is higher than a solution without a common ion.

77. Which of the following statement is false about metallic bonds?

a. They are very good conductors of electricity
b. They exhibit high malleability.
c. They exhibit high ductility.
d. They are hard to deform.

78. Volcano is one major contributor of acid rain. At very high temperatures, volcanoes give off tremendous amount of hydrogen sulfide and they are further oxidized in air. What is the product generated by the oxidization of hydrogen sulfide which is the main cause of acid rain?

a. Octasulfur
b. Sulfur trioxide
c. Sulfur dioxide
d. Elemental sulfur

79. What is the oxidation number of P_4?

a. -3
b. 0
c. +3
d. +4

80. In period 2 and 3, what word can you form if the first two letters has the highest ionization energy in groups 1 and 2 and the last two letters has the biggest noble gas atomic radius?

a. LiAr
b. BeAr
c. ClAr
d. AlAr

81. What is the specific heat of ethanol if 3600 J is required to raise a temperature of 100 g from 25°C to 145°C?

a. 0.3 J/g °C
b. 0.5 J/ g °C
c. 0.2 J/g °C
d. 0.4 J/g °C

82. How many moles of H_2SO4 is produced when $H_2S_2O_7$ is treated with water?

a. 1
b. 3
c. 2
d. 4

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

Rate Constant	Initial Concentration	Half-life
5	1	0.10
5	0.8	0.08
5	0.6	0.06
5	0.4	0.04

a. Zero Order Reaction
b. First Order Reaction
c. Second Order Reaction
d. Third Order Reaction

84. Which of the following reacts with rain water to form sulfuric acid?

a. Elemental sulfur
b. Sulfur dioxide
c. Hydrogen sulfide
d. Sulfur trioxide

85. Ammonia is a weak base. If it reacts with a strong acid such as sulfuric acid, it forms a very useful fertilizer in industrial scale. What is the chemical compound of the product?

a. (NH3)2SO4
b. (NH4)2SO4
c. NH4SO2
d. NH4SO3

86. What is the conjugate base of this reaction:

$NH_3+H_2PO_4^{-1} \leftrightarrow NH_4^{+1}+HPO_4^{-2}$

a. NH_3
b. $H_2PO_4^{-1}$
c. NH_4^{+1}
d. HPO_4^{-2}

87. Which of the following is not a preparation of alcohol?

a. Elimination reaction of alkene
b. Addition of water of alkene
c. Reduction of aldehyde
d. Reduction of ketone

88. A down cell is used to electrolyze molten table salt to form sodium metal and chlorine gas. Which of the following is the reduction half-cell reaction of electrolyzed molten salt? Clue: Remember the concept of electrolysis. Choose the best answer.

$Cl_2\ (g) + 2e^- \longrightarrow 2Cl^-\ (aq)\ E^0 = +1.36V$

$Na^+\ (aq) + e^- \longrightarrow Na\ (s)\ E^0 = -2.7V$

a. $Cl_2\ (g) + 2e^- \longrightarrow 2Cl^-\ (aq)$
b. $Na^+\ (aq) + e^- \longrightarrow Na(s)$
c. $2Cl_2\ (g) + 4e^- \longrightarrow 4Cl^-\ (aq)$
d. $2Na^+\ (aq) + 2e^- \longrightarrow 2Na(s)$

89. The process to produce sulfuric acid is

a. Phillips process
b. Frasch process
c. Haber process
d. Contact process

90. Arrange the following in decreasing electronegativity: S, Cl, F.
    a. S>Cl>F
    b. F>S>Cl
    c. F>Cl>S
    d. S>F>Cl

91. Which of the following events occurs during metaphase of mitosis
    a. chromosomes line up at equator
    b. chromosomes move towards the pole
    c. chromosomes undergo coiling
    d. chromosomes break and disintegrate

92. Haemodialysis is
    a. Removing the blood
    b. Cleaning the blood
    c. Diluting the blood
    d. All of the above

93. Self-replicating, small circular pieces of DNA in bacteria are called _____
    a. Nucleoid
    b. Chromatin
    c. Mesosome
    d. Plasmid

94. Average pH of human urine is about
    a. 7.4
    b. 3.5
    c. 6.00
    d. 8.00

95. Cartilage is not present in
    a. Nose
    b. Ears
    c. Epiglottis
    d. None of the above is correct

96. Organs with no apparent purpose are called:
    a. homologous organs
    b. analogous organs
    c. vestigial organs
    d. None of the above

97. What feature makes the probe useful to search for the specific gene from the genomic library?
    a. It is fluorescent
    b. It is radioactive
    c. It hybridizes with the certain piece of DNA
    d. All of the above

98. Why baldness is more frequent in males?
    a. It is X-linked dominant trait
    b. sex-influenced trait
    c. it is X-linked recessive trait
    d. both B and C are correct

99. Pivot joint exists between
    a. Tibia and fibula
    b. Humerus and ulna
    c. Humerus and scapula
    d. Ulna and radius

100. Enzymes act by:
    a. Increasing the activation energy
    b. Decreasing the activation energy
    c. No effect on activation energy
    d. Increase or decrease depending on the enzyme being used

101. Plasmids carry gene for
    a. Antibiotic resistance
    b. Fertility
    c. Growth
    d. Both a & b

102. _____ donot have elastic fibres
    a. capillaries
    b. Pulmonary arteries
    c. Arteries
    d. Pulmonary veins

103. Which of the following is NOT correct regarding hemoglobin?
    a. It is present in RBCs
    b. It is bright red in color
    c. It combines with oxygen to form oxyhemoglobin, carbonic anhydrase splits oxyhemoglobin into hemoglobin and oxygen
    d. It absorbs maximum oxygen at sea level

104. When an oxygen pressure is 115mm mercury, hemoglobin contains _____mL of oxygen per 100ml of blood.
    a. 19
    b. 19.6
    c. 98
    d. 20

105. Pinworms live in
    a. appendix
    b. colon
    c. caecum
    d. all of the above

113. Collection of bacterial and bacteriophage clones

a. Genotype
b. Genome pool
c. Genomic library
d. Genome

114. A single stranded nucleotide sequence that will hybridize into a certain piece of DNA is

a. Primer
b. Vector
c. Probe
d. Both A & C

115. Which of the following is NOT true about succession?

a. Primary succession is forged from where there is no trace of previous life
b. In secondary succession, new ecosystem is developed after an existing ecosystem is disturbed
c. Primary succession happens much faster than secondary succession
d. Primary succession starting on a dry soil or habitat is called xerosere

116. _____ is caused by enveloped RNA Virus and spread in epidemic

a. Herpes simplex
b. Small pox
c. Influenza
d. Polio

117. The fluid mosaic model of cell membrane suggests that

a. proteins are embedded in lipid bilayer
b. phospholipid bilayer has hydrophobic tails towards inwards and hydrophilic heads outwards
c. both A & B
d. none

118. Poisonous substances are secreted from peritubular capillaries into nephric filtrate through a process known as

a. Tubular reabsorption
b. Tubular secretion
c. Counter-current exchange
d. None of these

119. Ozone depletion is caused by

a. CFCs
b. carbon dioxide
c. methane
d. nitric oxide

120. With the increase in age, following features appear except

a. Vital capacity of the lung decreases.
b. Residual volume increases.
c. Expiratory reserve volume increases.
d. Inspiratory capacity decreases.

121. The events of menstrual cycle are regulated by hormones produced by

a. Adrenal gland
b. Pituitary gland
c. Hypothalamus
d. Thyroid gland

122. Which of the following cycles exists in human females?

a. Menstrual cycle
b. Ovarian cycle
c. Uterine cycle
d. All of the above

123. Choose the correct statement

a. Consumers and producers are autotrophs
b. Producers start the food chain
c. Bacteria are the only decomposers
d. Consumers release chemical elements as ions

124. Change in the frequency of alleles at a locus that occurs by chance is

a. Mutation
b. Genetic drift
c. Alteration
d. Non-random mating

125. All the hens living in a region are true breeding white in color. The allele for this trait is said to be

a. Fixed in gene pool
b. Mobile in gene pool
c. Random in gene pool
d. Stationary in gene pool

126. Histoplasmosis is infection of lungs which may worsen and cause death. the causative agent is

a. spores of fungus in soil contaminated with birds' faces
b. imperfect fungi
c. Aspergillus fumigatus
d. aflatoxins

127. S phase of cell cycle is involved in:

a. Preparation for division
b. Growth
c. DNA replication
d. Karyokinesis

106. Two types of giraffe existed in earlier times. One type with the long necks and the other type had short necks. The one with short necks could not survive because they could not reach the food source. The long necked giraffe survived and reproduced. This concept was proposed by:

a. Darwin
b. Lamarck
c. Mendel
d. Wallace

107. What is the risk of color blind child when father is color blind but mother is normal homozygous?

a. 0 %
b. 25 %
c. 50 %
d. 100 %

108. Flow of lymph is maintained by

a. Activity of skeletal muscles
b. Movement of viscera, breathing movements
c. The valves
d. All of the above

109. Trypsinogen is converted into trypsin by the activity of:

a. Oxyntic cells
b. Enterokinase
c. Absorptive cells
d. Peptidase

110. CFCs come from

a. air conditioning
b. refrigeration
c. packing materials
d. All of the above

111. Fungal group that is important due to antibiotic production is

a. Actinomycetes
b. Ascomycetes
c. Oomycetes
d. Basidiomycetes

112. A large portion of fatty acids and glycerol in the ileum enters

a. Into the blood stream
b. Into the epithelial cells of villi
c. Into lacteals
d. None of the above

128. Water uptake in plants involves

a. Active transport
b. Passive transport
c. Facilitated transport
d. All of the above

129. LH is produced as the result of

a. Ovulation
b. Decrease in FSH production
c. Increase in estrogen level
d. Both B and C

130. Initiation of translation in eukaryotes occurs by binding ribosomes to

a. 5' cap
b. poly A tail
c. hogness box
d. none of the above

131. Which of the following is pregnancy maintaining hormone?

a. Oxytocin
b. Estrogen
c. FSH
d. Progesterone

132. Which of the following statements is correct about micro-propagation?

a. A method of producing millions of seedlings in a limited amount of space
b. One of the methods of micro-propagationa is parenchyma culture
c. If correct proportions of auxins and gibberallins are added to a liquid medium, many new shoots will develop
d. It cannot be used commercially

133. The bonds responsible for the storage of energy in lipids

a. C – H
b. C = O
c. C – N
d. C – C

134. Fertilization of ovum takes place in

a. ovary
b. Proximal part of oviduct
c. Uterus
d. None of the above

135. _____ syndrome is often not recognised until adolescence

a. Down
b. Klinefelter
c. Turner
d. None of the above

136. _____ is the stable community and is also diverse

a. Pioneers community
b. Initiator community
c. Climax community
d. Seral community

137. Which of these is correctly matched?

a. Animal cell engineering – vortex mixing
b. Plant cell engineering – bioreactors
c. Bacterial cell engineering – Electric current while suspending in foreign DNA
d. None

138. Restriction enzymes are called so because they

a. Cut down viral DNA
b. They do not allow the growth of virus
c. They are site specific
d. All of the above

139. Which statement is incorrect?

a. Analogous organs are functionally different but structurally alike
b. Homologous organs are functionally different but structurally alike
c. Examples of analogous structures are wings of bats, birds and insects
d. Examples of homologous structures are arms of man, forelimb of cat, flipper of whale

140. The competitive inhibitors are structural analogues of

a. Substrate
b. Active site
c. Binding site
d. Co-enzyme

141. The diffusion of ions along with water also takes place by mass flow system along the _____ path

a. Symplast
b. Apoplast
c. Vacuolar
d. All of the above

142. _____ is the pioneer in search succession.

a. shrubs
b. foliose lichen
c. mosses
d. crustose lichen

143. Transgenic bacteria produce a dipeptide sweetener called

a. Neutrasweet
b. Ultrasweet
c. Disweet
d. Monosweet

144. Anticoagulant secretions are secreted by

a. Leeches
b. Ancylostoma duodenale
c. Both A and B
d. Ascaris

145. About _____% of kidney stones are composed of Uric acid and about _____% of kidney stones are composed of Calcium oxalate or phosphate.

a. 5%, 70%
b. 20%, 70%
c. 70%, 10%
d. 90%, 7%

146. In large intestine vitamin K is formed by the activity of:

a. Symbiotic bacteria
b. Parasitic bacteria
c. Obligate parasite
d. Facultative bacteria

147. Protection and nourishment to sperms is provided by

a. Fluid secreted by sertoli cells
b. Fluid in scrotum
c. Interstitial fluid
d. All of the above

148. Enzyme reacts with its substrate through a three dimensional cavity bearing a specific charge called

a. Active site
b. Binding site
c. Catalytic site
d. Allosteric site

149. Which of the following is not freely movable joint?

a. Hinge joint
b. Ball and socket joint
c. Pivot joint
d. All of the above are freely movable joints

150. Menopause is

a. End of menstrual cycle in the old age
b. Starting of menstrual cycle at puberty
c. Disorder of menstrual cycle
d. Prolongation or shortening of duration of menstrual cycle

151. Alpha helical structure is kept by the formation of _____ bonds among amino acids molecules.

a. hydrogen bond
b. ionic bond
c. disulphide bond
d. hydrophobic bond

152. Mesosomes are involved in

a. DNA replication
b. Export of extracellular enzymes
c. Carrying respiratory enzymes
d. All of the above

153. terpenoids are made up of repeating units of

a. isoprenoid
b. steroids
c. retinol
d. saccharide

154. Which of the following is not true for slime?

a. it is made of proteins
b. it enhances pathogenicity
c. it prevents phagocytosis
d. all of the above are true

155. Pseudocoelom develops from blastocoel of the embryo and it is bounded externally by

a. muscles
b. body wall
c. skin cells
d. mesoderm

156. Interaction between genes occupying different loci is

a. Dominance
b. Pleiotropy
c. Epistasis
d. None

157. Which of the following is not controlled by homeostasis?

a. Temperature
b. Water balance
c. Blood sugar level
d. No option is correct

158. Of the following which one is an energy storing process?

a. Glycolysis
b. Respiration
c. Photosynthesis
d. Kreb's cycle

159. which of the following does not belong to grade bilateria?

a. nematoda
b. annelida
c. mollusca
d. cnidaria

160. symbiotic nitrogen fixing organism

a. Nitrococcus
b. Clostridium
c. Azospirillum
d. Rhizobium

161. Complete the sentence using the most suitable preposition.

The introductory price of this perfume is starting _____ Rs 2000

a. With
b. At
c. From
d. Of

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

Somehow I find her <u>lunatic</u>.

a. Intelligent
b. Clever
c. Insane
d. Quiet

163. Complete the sentence using the most suitable preposition.

I always go to a park and sit _____ the shade of tree and read a book.

a. On
b. Beneath
c. In
d. Under

164. Latent most closely refers to

a. Late
b. Covert
c. pending
d. Overt

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

Dona's husband is a nihilist.

a. A person who is religious
b. A person who has moral values
c. A person who rejects all religious principles
d. Pessimist

166. Complete the sentence using the most suitable preposition.

Our vacation was a lot of fun _____ the cold weather

a. With
b. Despite
c. In
d. Of

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

The secret should remain between you and ..... .

a. Us
b. Me
c. Myself
d. I

168. Roil most closely refers to .

a. Calm
b. Humor
c. Satisfy
d. Agitate

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

Police in my town is negligent of their duties.

a. Obedient
b. Mindful
c. Irresponsible
d. Alert

170. Complete the sentence using the most suitable preposition.

The bank is ..... the shopping mall, so you can withdraw cash before you shop.

a. Within
b. Along
c. In front of
d. up

171. Onerous most closely refers to .

a. Single
b. Omnipotent
c. Cumbersome
d. Honorable

172. The word closest in meaning to Anomie is _____

a. Fairness
b. Isolation
c. Lawfulness
d. Depression

173. Xenophobic most closely refers to .

a. Heroic
b. Scary
c. narrow-minded
d. Shy

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

Under the new regimeall workers must work four days a week.

a. System
b. Action
c. Manager
d. Time

175. He is an actor who appears on a sitcom. Identify the word which relates with the word sitcom.

a. Action
b. Thriller
c. Situation Sci-fi
d. Situation comedy

176. Complete the sentence using the most suitable preposition.

There was no sound to be heard anywhere _____ the country

a. Over
b. On
c. Throughout
d. In

177. Complete the sentence using the most suitable preposition.

Ok you can play as long as you want to but _____ this area only.

a. Inside
b. Within
c. On
d. In

178. Complete the sentence using the most suitable preposition.

She stepped down from the stairs ..... the floor.

a. onto
b. Against
c. On
d. Into

179. Complete the sentence using the most suitable preposition.

I am talking ..... you.

a. To
b. By
c. With
d. Before

180. Complete the sentence using the most suitable preposition.

The Finance department received a call ..... the bank loan.

a. For
b. Besides
c. Concerning
d. About

Answer Key

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

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

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

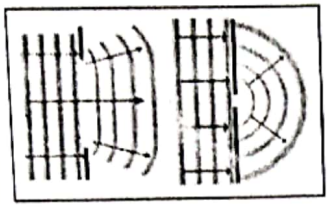
Question Number	Correct Option
161.	c
162.	c
163.	c
164.	b
165.	c
166.	b
167.	b
168.	d
169.	c
170.	c
171.	c
172.	b
173.	c
174.	a
175.	d
176.	c
177.	b
178.	a
179.	a
180.	c

Answers and Explanations

Question Number	1.	Correct Option	a

Explanation

For diffraction to take place the wavelength of the incoming wave should be comparable to the size of the slit. Only in such scenario diffraction will occur. As shown below



If the wavelength of the light is smaller than the slit size then no significant diffraction will occur and the wavelength will easily pass through the aperture without diffracting.

Question Number	2.	Correct Option	d

Explanation

Speed of sound in hydrogen is 4 times than speed in helium because mass of helium is 4 times the mass of hydrogen.

Question Number	3.	Correct Option	b

Explanation

In inertial frame of reference an object on which no net force is acting is thought to be moving in a straight line with constant velocity or 0 acceleration.

Question Number	4.	Correct Option	c

Explanation

In measurements errors are of two types

1. Random errors
2. Systematic errors

Random error occurs due to some uncontrolled factors like fluctuation in readings due to the influence of environment. An example include measuring the time taken for an athlete to complete a lap by running. This is a random error because it involves human reaction time.

Systematic

Question Number	5.	Correct Option	c

Explanation

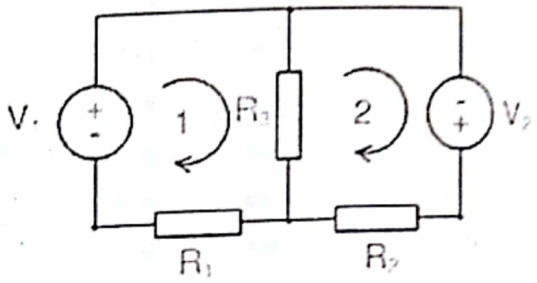
If a body accelerates then it is not in equilibrium and an external force is acting on it.

$$F = ma$$

Question Number	6.	Correct Option	b

Explanation

Consider the loops



From loop 1 we have

$V_1 - V_{R1} - V_{R3} = 0$

Solving the loop2, we get

$V_2 - V_{R2} - V_{R3} = 0$

Which can be simplified as

$V_1 + (I_2 - I_1) R_3 - I_1 R_1 = 0$

$I2 = \frac{I1(R1+R3)-V1}{R3}$

Similarly

$V_2 + (I_1 - I_2) R_3 - I_2 R_2 = 0$

$I2 = \frac{I1 R3 + V2}{R2+R3}$

Question Number	7.	Correct Option	c

Explanation

Relation between linear momentum and kinetic energy is given as

$$P^2 = 2m(K.E)$$

As momentum decrease 50% then

$$(0.5P)^2 = 2m\,(K.E)$$

$$0.25\,P^2 = 2m\,(K.E)$$

Shows kinetic energy remains 25% of the original which means a 75% decrease

Question Number	8.	Correct Option	d

Explanation

Two sources are called Monochromatic coherent sources if they emit light of same wavelength with constant phase difference.

Question Number	9.	Correct Option	a

Explanation

$C_p/C_v = n = 1.4$

Question Number	10.	Correct Option	b

Explanation

Hooks law holds within proportionality limit where stress is directly proportional to strain.

Imageresultforstressstraingraph

from the graph above we can see that Hooke's Law is valid till proportional limit as the stress strain follows a linear relation.

Question Number	11.	Correct Option	c

Explanation

Difference between progressive and stationary wave is that progressive wave has equal amplitude over all points.

In stationary waves when the reflected wave coincides with the forward moving wave the ampitude doubles. Similarly when the crest of one wave and the trough of the other wave meet the resulting stationary wave has an amplitude of 0. As shown in the diagram below.

ImageresultforAmplitudeinprogressiveandstationarywaves

Question Number	12.	Correct Option	d

Explanation

Whenever an object is stretched, it is diameter decreases and length increases.

Question Number	13.	Correct Option	c

Explanation

We know that v=d/t

When quantities are multiplied or divided, uncertainty is added.

Percent uncertainty in displacement= (1/20)×100= 5%

Percent uncertainty in time= (2/100)×100= 2%

So percent uncertainty in velocity= 5+2= 7%

Question Number	14.	Correct Option	b

Explanation

Ratio of linear stress to the linear strain is called elastic modulus not the bulk modulus.

Question Number	15.	Correct Option	a

Explanation

Mass is measure of inertia.

Question Number	16.	Correct Option	c

Explanation

Initially there is no vertical component of the velocity at release point so the bodies will moves downward under the action of gravity which is same due to equal masses. Hence both bodies will hit the ground at same time.

Question Number	17.	Correct Option	c

Explanation

In jet propulsion hot gases ejected at very high speed for provide opposite trust to the jet which is according to Newton's third law of motion.

Question Number	18.	Correct Option	d

Explanation

Mass of substance A left after 3 hours (8 half -life periode) = $\frac{2}{2^8}$ = $\frac{1}{256} kg$

Mass of substance Bleft after 3 hours (2half -life periods)= $\frac{5}{4}$

Total mass of mixture left after 3 hours= $\frac{1}{256} + \frac{5}{4}$

= $\frac{321}{256}$

Question Number	19.	Correct Option	d

Explanation

Law of Conservation of Momentum:

- total momentum before a collision inside a closed system is equal to the total momentum after the collision
- For two colliding bodies, this can be mathematically written as:

$$m_1u_1+m_2u_2=m_1v_1+m_2v_2$$

Where m_1 and m_2 are the masses, u_1 and u_2 are the initial velocities and v_1 and v_2 are the final velocities of the colliding bodies respectively.

- In an elastic collision, the kinetic energy of the colliding bodies is conserved. Hence the total kinetic energy before the collision is equal to the total kinetic energy after the collision.
- In an inelastic collision, the colliding bodies lose some of the kinetic energy in the form of other energies such as heat.

Total energy (kinetic and heat) and momentum are conserved in all type of collisions.

Question Number	20.	Correct Option	a

Explanation

For a given wave speed frequency is inversely proportional to wavelength.

Question Number	21.	Correct Option	c

Explanation

We know that $v = \sqrt{\frac{\gamma p}{\rho}}$

If the density of a gas is doubled keeping other parameter constant then sound velocity becomes $\frac{1}{\sqrt{2}}$ times

Question Number	22.	Correct Option	a

Explanation

As in parallel circuit we add the reciprocal of the resistances which sum a value which is less than any individual resistance present in the circuit. The formula for computing equivalent resistance in parallel is given by

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \dots \frac{1}{R_n}$$

Thus the value of resistance decreases.

In a series combination the resistances are always added therefore the equivalent resistance is always greater.

Question Number	23.	Correct Option	d

Explanation

Sodium chloride flame gives light which is fully monochromatic.

Question Number	24.	Correct Option	a

Explanation

Modulus of Elasticity is known as the Young's Modulus. Mathematically it is given by

$$E = \frac{\frac{F}{A}}{\frac{\Delta l}{l}}$$

where F is the force applied, A is the area, Δl is the elongation in length and l is the original length.

Also commonly written as

$$E = \frac{stress}{strain}$$

Since all other parameters except elongation are same so when taking the ratio of Young's modulus of the two materials all the values cancel out.

From the first equation we can see that the elongation denoted by Δl is inversely proportional to the Young's modulus there fore their ratio becomes 5:2.

Question Number	25.	Correct Option	d

Explanation

All given equations are well balanced and correct.

Question Number	26.	Correct Option	a

Explanation

Sodium-24 is used to study circulation of blood because this isotope is radioactive and is absorbed by the blood depending upon the amount of blood circulating.

Question Number	27.	Correct Option	d

Explanation

Waves produced on the surface of water in a lake are Transverse waves.

Question Number	28.	Correct Option	d

Explanation

Velocity of a wave is defined as the distance covered by a wave in a unit time. Since time period is defined as the time it takes for a complete wave cycle to pass hence

v = wavelength/time period

$v = 0.3/2 = 0.15$m/s

Question Number	29.	Correct Option	d

Explanation

While deriving the given relation we do not considered rotational and vibrational motions of the molecules. Only linear motion of the molecules is considered.

Question Number	30.	Correct Option	a

Explanation

Binding energy per nucleon with increase in atomic mass increase up to Fe-56 then decrease with further increase in atomic mass.

Question Number	31.	Correct Option	c

Explanation

Gas is the simplest form of matter because there are forces between the molecules which can be ignored for certain conditions (high temperature and low pressure) simplifying their study.

Question Number	32.	Correct Option	d

Explanation

Term P/ρg has units of m and is called pressure head.

Question Number	33.	Correct Option	a

Explanation

If there are two degrees of freedom then,

$< v_x^2 > = < v_y^2 >$

And

$< v_x^2 > + < v_y^2 > = < v^2 >$

$\Rightarrow < v_x^2 > = \frac{1}{2} < v^2 >$

And pressure becomes,

$P = \frac{1}{2}\rho < v^2 >$

Question Number	34.	Correct Option	d

Explanation

All the given statements are correct.

Question Number	35.	Correct Option	c

Explanation

Laser beam is perfectly polarized.

Question Number	36.	Correct Option	d

Explanation

Penetration power of X-rays depends only upon frequency.

Question Number	34.	Correct Option	d

Explanation

All the given statements are correct.

Question Number	35.	Correct Option	c

Explanation

Laser beam is perfectly polarized.

Question Number	36.	Correct Option	d

Explanation

Penetration power of X-rays depends only upon frequency.

Question Number	37.	Correct Option	b

Explanation

Flow will be laminar if the viscous forces dominate the inertial forces. High viscous forces make the flow tranquil.

Question Number	38.	Correct Option	c

Explanation

Stokes' law gives drag force.

Question Number	39.	Correct Option	b

Explanation

As the temperature changes, density do not remains constant. So continuity equation becomes

$$\rho_1 A_1 v_1 = \rho_2 A_2 v_2$$

where $\rho_2 = P_2/RT_2 = 9.74 \times 10^{-3} kg/m^3$

$$v_2 = \rho_1 A_1 v_1 / \rho_2 A_2$$

Putting all given values, we get

$v_2 = 2900 m/s$

Question Number	40.	Correct Option	d

Explanation

All given options include the use of X-ray deflection techniques.

Question Number	41.	Correct Option	d

Question Number	42.	Correct Option	d

Explanation

From the relation

$$\frac{hc}{\lambda} = Ve$$

we find that as V increase ,λdecrease . and whenλdecrease frequency increases

Question Number	43.	Correct Option	c

Explanation

Relation to be used is

$$M = f_o/f_e = 20/5 = 4$$

$$M = 4$$

Question Number	44.	Correct Option	d

Explanation

By quantitative definition of Charles law:

$$v = v_o(1 + \frac{t}{273})$$

By increasing temperature by one degree, the volume increases by 1/273 times.

Question Number	45.	Correct Option	d

Explanation

All assumptions are needful for the derivation of Bernoulli's equation.

Question Number	46.	Correct Option	b

Explanation

Avogadro's law: "equal volumes of all gases, at the same temperature and pressure, have the same number of molecules". The density equation of the gas is derived from the ideal gas equation. Avogadro speaks that the number of moles is directly proportional to volume. Hence, the molar mass should also be directly proportional to the density of gas. The higher the molar mass, the denser it is.

Question Number	47.	Correct Option	b

Explanation

The strongest bond is Cl–Cl. It could have been F–F because fluorine is very electronegative element. However, the lone pairs of F–F are stronger than bond pairs and they repel each other because they are very close making its repulsion force greater than Cl–Cl.

Question Number	48.	Correct Option	b

Explanation

Radical is an atom or ion or a molecule which has an unpaired valence electoron.Radicals are usually formed from the cleavage of a bond called homolysis. They do not exhibit octet of electrons and they are very reactive with single unpaired electrons and are unstable in nature. The following diagram shows the formation of chlorine free radical

Imageresultforchlorinefreeradicalstructure

Question Number	49.	Correct Option	a

Explanation

Isotopes of each kind of element must have the equal number of protons as it defines their atomic number. If the number of proton is different, then the element changes to another form. Isotopes differ only in neutrons, specifically in mass. So, the answer is No, it is not possible for an isotope to have different number of protons.

Question Number	50.	Correct Option	b

Explanation

Strategy: When we talk about gases, in most cases, the formula that we must use is the ideal gas law. However, the question doesn't have enough data to satisfy the equation. So, this must be equating two equations to solve for the weight.

For CO : $P \times V = \frac{w}{44} \times R \times 303$ Equation 1

For He $P \times \frac{V}{2} = \frac{5}{4} \times R \times 298$ Equation 2

Divided Eq. 2 to Eq . 1 to cancel P,V and R . What must left is w. Then solve f or weight.

$2 = \frac{\frac{w}{44}(303)}{\frac{5}{4}(298)}$; w = 108 .18 g

Question Number	51.	Correct Option	b

Explanation

Strategy: The formula of alkane is C_nH_{2n+2}. In order to get the molecular formula of the compound, just do a ratio and proportion.

$\frac{H}{C} = \frac{32.4}{10.8} = 3 = \frac{2n+n}{n}$ solve for n

n = 2 Be careful becouse there are two values of n. Get the highest integer number as possible .

Therefore the molecular formula of the alkane fuel is : $C_2H_{2(2)+2}=C_2H_6$(ethane)

Question Number	52.	Correct Option	c

Explanation

Adding more $N_2(g)$ and $H_2(g)$ will have no effect on the equilibrium constant. The reaction will still go to the right. If we are going to extract more ammonia out, the reactants will continue to react to form more products to relieve the change. Therefore, the reaction will still go to the right. If we increase the temperature, energy will be added to the system and there's a tendency for the heat of reaction to increase approaching to a positive value. Consequently, the reaction will shift to the left. Inerting a vessel with an inert gas like argon to increase the pressure will have no effect in the equilibrium constant. Therefore, the direction of the reaction is still the same. Adding a catalyst to the reaction will have no effect to the direction of the reaction because it's not reacting to the reactant by definition. In fact, it will make the reaction fast.

Question Number	53.	Correct Option	b

Explanation

$$MnO_4^-(aq) + CH_3CH_2OH(aq) \rightarrow CH_3CH(aq) + MnO_2(s)$$

Step 1: Do the initial Balance

$$2MnO_4^-(aq) + 3CH_3CH_2OH(aq) \rightarrow 3CH_3CHO(aq) + 2MnO_2(s)$$O = 11 O = 7

H = 18 H = 12

Step: 2: Add H^+ ion or H_2O to balance the reaction

$$2MnO_4^-(aq) + 3CH_3CH_2OH(aq) + 2H^+ \rightarrow 3CH_3CHO(aq) + 2MnO_2(s) + 4H_2O$$

O = 11 O =11

H = 20H = 20

Therefore, the balance redox reaction in acidic form is:

$$2MnO_4^-(aq) + 3CH_3CH_2OH(aq) + 2H^+ \rightarrow 3CH_3CHO(aq) + 2MnO_2(s) + 4H_2O$$

Question Number	54.	Correct Option	a

Explanation

Markovnikov's rule is the addition of HX to unsymmetrical alkene. The H atom will not bond to more substituted carbon but bonds to less substituted carbon atom to form stable carbocation.

Question Number	57.	Correct Option	d

Explanation

Approximately four billion years ago, Earth's atmosphere was composed of methane, ammonia, water and very little amount of oxygen. But now Earth's troposphere is composed mainly of oxygen and nitrogen. Primitive organisms used light to break down carbon dioxide from volcanic activities into carbon and oxygen (Photosynthesis). Photodecomposition of water vapor via UV light produced tremendous amount of oxygen.

Question Number	55.	Correct Option	b

Explanation

$R = k[A]^x[B]^y$

$k_1 = \frac{R1}{[A]^x[B]^y} = \frac{1.1\times10^{-5}}{(0.2)^x(0.2)^y}$

$k_2 = \frac{R2}{[A]^x[B]^y} = \frac{4.4\times10^{-5}}{(0.4)^x(0.2)^y}$

$k_3 = \frac{R3}{[A]^x[B]^y} = \frac{3.3\times10^{-5}}{(0.2)^x(0.6)^y}$

By Principle: $K_1 = k_2 = k_3 = k$

if $K_1 = K_2$:

$\frac{1.1\times10^{-5}}{(0.2)^x(0.2)^y} = \frac{4.4\times10^{-5}}{(0.4)^x(0.2)^y}$

$\frac{(0.4)^x(0.2)^y}{(0.2)^x(0.2)^y} = \frac{4.4\times10^{-5}}{1.1\times10^{-5}}$

$\frac{(0.4)^x}{(0.2)^x} = \frac{4.4\times10^{-5}}{1.1\times10^{-5}}$

Solve for x: x = 2

if $k_2 = k_3$

$\frac{4.4\times10^{-5}}{(0.4)^x(0.2)^y} = \frac{3.3\times10^{-5}}{(0.2)^x(0.6)^y}$

$\frac{(0.2)^2(0.6)^y}{(0.4)^2(0.2)^y} = \frac{3.3\times10^{-5}}{4.4\times10^{-5}}$

Solve for y: y = 1

$K = K_1$

$= \frac{R1}{[A]^x[B]^y}$

$= \frac{1.1\times10^{-5}}{(0.2)^2(0.2)^1}$

$= 1.375 \times 10^{-3}$

Question Number	56.	Correct Option	d

Explanation

The mechanism of nucleophilic acyl substitution involves a two-step process:

- a nucleophile attacks the carbonyl group to cleave the pi bond and forms a tetrahedral intermediate
- loss of leaving group to form a substituted product.

Question Number	58.	Correct Option	b

Explanation

Heat is a thermal energy measured in Joules while temperature is a measure of average kinetic energy of all the atoms in a system measured in Kelvin.

Question Number	59.	Correct Option	a

Explanation

H has the least reduction potential. Therefore, it must have the greatest strength as reducing agent. Increasing strength as reducing agent is i<iii<iv<ii.

Question Number	60.	Correct Option	d

Explanation

This reaction is a Grignard reaction. Methyl bromide is an alkyl halide that exhibits polarity where carbon is the partial positive charge and bromine is the partial negative charge. Magnesium under anhydrous condition in the presence of diethyl ether can insert between the carbon and Br shifting the polarity and giving a product methyl magnesium bromide.

Question Number	61.	Correct Option	a

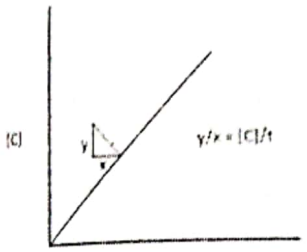
Explanation

Nucleophiles are reactants that donates or provides a pair of electrons to form a covalent bond with electrophiles. They are also considered as Lewis base,

Question Number	62.	Correct Option	c

Explanation

The concentration-time graph is a tool to track the change in concentration over time. It follows a pattern called gradient which is defined as the change in y-axis over the change in x-axis. This is a pattern where the concentration changes over time. It shows where the reactions starts and stops.



Question Number	63.	Correct Option	a

Explanation

The order of the reactivity of acid dericatives is

acid halide > acid anhydride > ester > amide

Question Number	64.	Correct Option	d

Explanation

Tollen's test is used to distinguish between an aldehyde and ketone. In this test aldehydes are oxidised to corresponding carboxyllic acids giving silver color.

Fehlings test is also used for aldehydes since the aldehyde can be easily oxidised to the correspondding carboxyllic acid. The blue color of the solution gives red precipitates in case of positive outcome.

Brady's reagent is used to identify the carbonyl group present both in aldehydes and ketones. Brady's reagent does change the color and forms a red precipitate called hydrazones.

Question Number	65.	Correct Option	c

Explanation

Strategy: Since the problem states that the condition is at constant temperature, we can conclude that we can use Boyle's Law

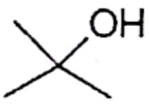
$P_1V_1 = P_2V_2$

$V_2 = \frac{1.5\ atm(800\ ml)}{0.8\ atm}$ =1500 mL

Question Number	66.	Correct Option	d

Explanation

The methyl group and hydroxyl group is attached at 2nd position of propane base. Therefore, the name of the compound is 2-methyl-2-propanol or also known as tert-butanol.



Question Number	67.	Correct Option	c

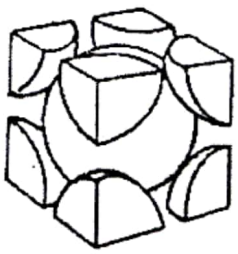
Explanation

Sulfuric acid plant uses sulfur trioxide to produce sulfuric acid. Therefore, it must not contribute to acid rain per se.

Question Number	68.	Correct Option	d

Explanation

Strategy: In each corner of the cube, you can see 1/8 of the volume of atom. Since there are 8 corners in the cube, in total, that's equivalent to 1 atom. There's also one atom at the center and that makes 2 atoms over all for body centered cubic cell.



$n = (8 \times \frac{1}{8}) + 1 = 2\ atoms$

Question Number	69.	Correct Option	d

Explanation

An electron group can be a single bond, double bond, triple bond or a lone pair. The water molecule is under the tetrahedral family specifically in the 'bent' order because it has 4 groups (2BP and 2LP). It is bent because two lone pairs on the central atom have stronger repulsion force and repels the bonded pairs of the branch shaping it like boomerang.

Question Number	70.	Correct Option	b

Explanation

The coordination number 6 corresponds to an octahedral shape

Question Number	71.	Correct Option	b

Explanation

$2N_2O_5(g) + O_2(g)$

$K = 2.6 \times 10^{-4}/S$ (1st Order Reaction)

$t1/2 = \frac{In\,2}{k} = \frac{In\,2}{2.6\times10^{-4}/s} = 2665.95s$

$= 44.43\ mins = 0.74\ hr$

Question Number	72.	Correct Option	c

Explanation

Ester and water will undergo hydrolysis reaction to form carboxylic acid and alcohol.

Imageresultforhydrolysisofester

Question Number	73.	Correct Option	d

Explanation

Fluorine is more electronegative element than O. Therefore, we should take fluorine that accepts electron.

$\overbrace{O\ F_2}^{x\ \ -1}$

$x + 2(-1) = 0$

$x - 2 = 0$

$x = +2$

$\overbrace{O\ F_2}^{+2\ \ -1}$

Therefore, O has + 2 oxidation number

Question Number	74.	Correct Option	d

Explanation

You can describe the composition of a compound in terms of the weights of its constituent elements
by determining the percent composition of particular elements in the molecule.

To calculate percent compositions, you would find the weight of each constituent atom, then figure out what percent of the total molecular weight it makes up.

Strategy: This question is tricky but easy. To calculate the % mass composition of air, we should set a mole basis to convert moles into mass:

Basis : 100 mols of air

Number of mols of Oxygen in air : 100 mols (0.21) = 21 mols of O_2

Number of mols of Nitrogen in air : 100 mols (0.79) = 79 mols of N_2

mass of oxygen : 21 mols of $O_2(\frac{32g\ of\ O_2}{1\ mol\ of\ O_2})$=672 g of$O_2$

mass of oxygen : 21 mols of$N_2(\frac{28g\ of\ N_2}{1\ mol\ of\ N_2})$= 2212 g of$N_2$

Total mass gases = 672 + 2212 = 2884 g of air

$\%O_2$by mass $=(\frac{672\ g}{2884\ g}) \times 100 = 23.3\%$

$\%N_2$by mass $=(\frac{2212\ g}{2884\ g}) \times 100 = 76.7\ \%$

Question Number	75	Correct Option	a

Explanation

The strongest intermolecular force is ion-dipole force which requires 40-600 kJ/mol to detach a cation that is temporarily attached from the electronegative end of stable molecule.

Ion - depole 40-600 kJ/mol

Hydrogen bond 10-40kJ/mol

Dipole-dipole 5-25kJ/mol

Ion - induced dipole 3-15kJ/mol

Dipole - induced dipole 2-10kJ/mol

London (Dispersion Force) 0.05 - 40kJ/mol

Question Number	76.	Correct Option	b

Explanation

The salt of a weak acid is a strong electrolyte. The salt will completely dissociate as soon as it contacts to the solution with its common ion while weak acid on the other hand will only ionize slightly. Applying Le Chatelier's principle, adding more common ion to the salt will suppress the ionization of weak acid shifting the equilibrium from right to left. In this case, less H^+ ions will be generated and therefore, the pH value will tend to go high or less acidic.

Question Number	77.	Correct Option	d

Explanation

Metals can easily be deformed because it contains series of positive ions lined up in fixed arrays making it easy to slide up and down a layer of it. This is the reason why most metals are characterized as high malleable and high ductile. These layers of positive charges are the reason why metals can easily conduct electricity since electrons can move freely on top of the positive charge layers.

Question Number	78.	Correct Option	c

Explanation

Volcanoes is a naturally occurring producers of greenhouse gases. Volcanoes emits hydrogen sulfide and when burned it produces sulfur dioxide that causes acid rain.

$2\,H_2S\,(g) + 3\,O_2\,(g) \rightarrow 2SO_2\,(g) + 2\,H_2O\,(g)$

However, volcanoes can also reduce its production of SO_2 when it reacts with H_2S to form elemental solid sulfur.

$2\,H_2S\,(g) + SO_2\,(g) \rightarrow 3S(s) + 2\,H_2O\,(g)$

Question Number	79.	Correct Option	b

Explanation

Tetraphosphorus (P_4) is the most stable form of phosphorus allotropes because of its tetrahedral shape. Therefore, the oxidation number of P_4 is zero.

Question Number	80.	Correct Option	b

Explanation

The element that has the highest ionization energy in alkali metals of period 2 and 3 is Be. The biggest element in noble gases of period 2 and 3 is Ar. Therefore, the word is BeAr.

Question Number	81.	Correct Option	a

Explanation

$Q = mC_p \Delta T$

$C_p = \frac{Q}{m\Delta T}$

$C_p = \frac{3600}{(100g)(145-25)^oC} = 0.3\ \frac{J}{g.^oC}$

Question Number	82.	Correct Option	c

Explanation

Formation of sulfuric acid is done through Contact Process. The above reaction is an intermediate step and the chemical equation is shown below.

$H_2\,S_2O_7\,(aq) + H_2O\,(l) \rightarrow 2H_2\,SO_4\,(aq)$

The following table summarises the reactions involved in the Contact Process

Imageresultforcontactprocesssteps

Question Number	83.	Correct Option	a

Explanation

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

Question Number	84.	Correct Option	d

Explanation

$SO_3\,(g) + H_2O(l) \rightarrow H_2SO_4\,(aq)$

Question Number	85.	Correct Option	b

Explanation

$2NH_3\ (aq) + H_{3S}O_4\ (aq) \rightarrow (NH_4)_2SO_4\ (aq)$

Question Number	86.	Correct Option	d

Explanation

$NH_3 + H_2PO_4^{-1} \leftrightarrow NH_4^{+1} + HPO_4^{-2}$

$H_2PO_4^{-1}$ is the acid and its conjugate base is HPO_4^{-2}

Question Number	87.	Correct Option	a

Explanation

Elimination reaction of alkene to form alcohol is not possible but elimination reaction of alcohol will produce alkenes.

Question Number	88.	Correct Option	d

Explanation

Electrolysis occurs when power is applied to a molten compound or aqueous solution to form a non-spontaneous reaction. Unlike galvanic cells which forms spontaneous reactions, the trend of redox potential values for electrolysis is reversed. In the electrolysis of molten table salt, the negative potential value will be in the cathode and the positive potential value will be in the anode to form a nonspontaneous reaction.

$Cl_2\ (g) + 2e^- \rightarrow 2Cl^-(aq)\ E^0 = +1.36V$

$Na^+\ (aq) + e^- \rightarrow Na\ (s)\ E^0 = -2.71V$

Oxidation Half – Reaction (Anode): $2Cl^-\ (l) \rightarrow Cl_2\ (g) + 2e^-$

Reduction Half – Reaction (Cathode): $2Na^+\ (l) + 2e^- \rightarrow 2\ Na\ (s)$

Overall reaction: $2Cl^-\ (aq) + 2Na^+\ (aq) \rightarrow Cl_2\ (g) + 2Na(s)$

$E^0_{cell} = E^0_{cathode} - E^0_{anode}$

$E^0_{cell} = -2.71V - (1.36V)$

$E^0_{cell} = -4.07V$

Giving a negative value of cell potential means it is nonspontaneous reaction. This means that you need more than 4 volts in order for the reaction to occur.

Question Number	89.	Correct Option	d

Explanation

Contact process is an alternative convenient mechanism to produce sulfuric acid from sulfur trioxide.

Question Number	90.	Correct Option	c

Explanation

The electronegativity trend across a period is decreasing from right to left and from up to down along the group. F is at period 2 and Cl and S are at period 3. Therefore, the highest electronegative element is F. Across period 3, Cl is more electronegative than S. Therefore, the answer is F>Cl>S.

Question Number	91.	Correct Option	a

Question Number	92.	Correct Option	b

Explanation

Explanation: hemodialysis is the procedure of cleaning the blood. It involves the removal of waste products and extra fluid from the body. It is recommended when human kidney doesnot perform its function properly and blood is not cleansed to remove waste products.

Question Number	93.	Correct Option	d

Explanation

nucleoid is the single coiled DNA or nuclear material. other names are nuclear body, chromatin body, and nuclear region.

Plasmids are self-replicating, small circular pieces of DNA in bacteria. they often contain genes for drug resistance, heavy metals, disease, and insect resistance.

Question Number	94.	Correct Option	c

Explanation

Explanation: fact

Question Number	95.	Correct Option	d

Explanation

Explanation: all of the above have cartilage.

Question Number	96.	Correct Option	c

Explanation

By definition

Vestigial organs of human include appendix, coccyx, nictating membrane.

Question Number	97.	Correct Option	d

Explanation

Probe is single stranded nucleotide sequence which hybridizes with the certain piece of DNA in genomic library. It is either radioactive or fluorescent which aids in locating the probe and the required gene is obtained from genomic library.

Question Number	98.	Correct Option	d

Explanation

male pattern baldness is due to recessive gene on X chromosome. because females have both X chromosomes, baldness is not dominant.

Question Number	99.	Correct Option	d

Explanation

Explanation: Humerus and ulna – hinge joint

Humerus and scapula – ball and socket joint

Ulna and radius – pivot joint

Question Number	100.	Correct Option	b

Explanation

Activation energy needs to be decreased in order to complete the reaction fast which is the property of an enzyme. Lower the activation energy, more readily the reaction is completed.

Question Number	101.	Correct Option	d

Explanation

plasmid pSC 101 has antibiotic resistance gene for tetracycline

plasmid pBR 322 has antibiotic resistance gene for tetracycline and ampicillin

Question Number	102.	Correct Option	a

Explanation

Explanation: all arteries have elastic fibres along with thick muscle layer.

All veins have elastic fibres but in less quantity along with thin muscles.

Capillaries do not have elastic fibres.

Question Number	103.	Correct Option	b

Explanation

Explanation: hemoglobin resides in RBCs.

It is purplish red in color and attains bright red color when combined with oxygen to form oxyhemoglobin.

An enzyme carbonic anhydrase, present in RBCs, splits oxyhemoglobin into hemoglobin and oxygen in the presence of low oxygen concentration and less pressure.

Hemoglobin absorbs maximum oxygen at sea level i.e. about 20mL/100mL of blood.

Question Number	104.	Correct Option	b

Explanation

When an oxygen pressure is 115mm mercury, hemoglobin is 98% saturated, and therefore contains 19.6ml of oxygen per 100ml of blood.

Hemoglobin is completely oxygenated at 100mmHg.

When oxygen pressure decreases 60mmHg, the oxygen saturation of hemoglobin decreases sharply.

Question Number	105.	Correct Option	d

Explanation

fact

pinworms are also called Enterobius vermicularis

Question Number	106.	Correct Option	a

Explanation

According to Darwin, only those species survived that could adapt to the environment and could get their food and living.

Question Number	107.	Correct Option	a

Explanation

Since colorblindness is recessive trait, the daughters will be heterozygous normal and sons will be normal.

Question Number	108.	Correct Option	d

Explanation

Explanation: fact

Question Number	109.	Correct .Option	b

Explanation

Enteropeptidase or enterokinase is produced by cells of the duodenum and converts trypsinogen (a zymogen) into its active form trypsin, resulting in the subsequent activation of pancreatic digestive enzymes including trypsin.

Question Number	110.	Correct Option	d

Explanation

fact

CFCs destroy ozone layer by triggering series of reactions with ozone and radicals production. it also contributes to global warming through greenhouse effect.

Question Number	111.	Correct Option	b

Explanation

Bacteria and fungi of class ascomycetes are main producers of antibiotics.

Question Number	112.	Correct Option	b

Explanation

Explanation: A large portion of fatty acids and glycerol in the ileum enters into the epithelial cells of villi where they combine to form fats.

These fats enter lacteals. Proteins in lymph vessels combine with fats to form lipo-proteins. They pass into blood stream via thoraicic lymphatic duct.

Question Number	113.	Correct Option	c

Explanation

by definition

genomic library is the collection of bacterial and bacteriophage clones, each clone containing the particular sequence of DNA from the source cell.

production of genomic library:

1. an organism's DNA is sliced up into pieces.

2. pieces are put into vectors

3. vectors are taken up by host bacteria

4. the entire collection of bacterial or bacteriophage clones that are produced contain all the genes of the organism

Question Number	114.	Correct Option	c

Explanation

A probe is a single stranded DNA or RNA fragment used in genetic engineering to search for a particular gene or other DNA sequence. The probe has a base sequence complementary to the target sequence and will thus attach to it by base pairing and help finding a particular gene.

A primer is a short strand of RNA or DNA, about 18-22 bases, that acts as a starting point for DNA synthesis.

A vector is a DNA molecule used as a vehicle to artificially carry foreign genetic material into another cell, where it can be replicated.

Question Number	115.	Correct Option	c

Explanation

secondary succession happens much faster than primary succession because previous community has left its mark in the form of improved soil and seeds.

Question Number	116.	Correct Option	c

Explanation

Herpes simplex is caused by DNA virus.

Influenza is caused by enveloped RNA Virus

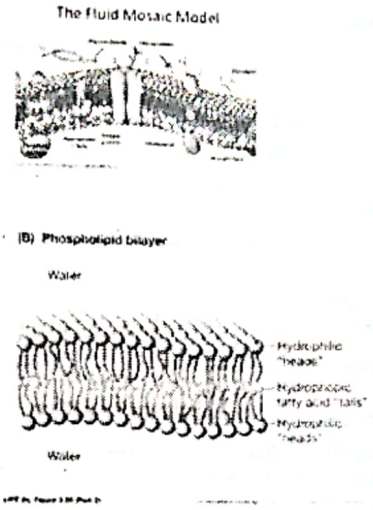
Small pox is also caused by DNA vrus.

Polio virus is non-enveloped RNA virus.

Question Number	117.	Correct Option	c

Explanation

fact. phospholipid bilayer has hydrophobic tails towards inwards and hydrophilic heads outwards, this makes the cell membrane selectively permeable.



Question Number	118.	Correct Option	b

Explanation

Explanation: tubular secretionis the process that extracts substances from blood plasma in the peritubular capillaries and secretes them into thetubularfluid in the renaltubule.

It is used to remove metabolic wastes, such as urea and uric acid, and drugs from the blood.

Tubular reabsorption is the process by which thenephron removes water and solutes from thetubularfluid and returns them to the circulating blood.

Question Number	119.	Correct Option	a

Explanation

major cause of ozone depletion is CFCs released in the atmosphere by electric appliances and packaging materials used by humans.

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	120.	Correct Option	c

Explanation

Explanation:
A. Vital capacity of the lung decreases.
B. Residual volume increases.
C. Functional residual capacity increases.
D. Inspiratory capacity decreases.

Question Number	121.	Correct Option	b

Explanation

fact

Pituitary gland produces follicle stimulating hormone which stimulates the development of several primary follicles.

Decrease of FSH and increase in estrogen causes pituitary to secrete luteinizing hormone which induces ovulation.

Question Number	122.	Correct Option	d

Explanation

female reproductive cycle is called menstrual cycle which consists of 2 phases. 1. Ovarian cycle, 2. Yterine cycle. These cycles are regulated by pituitary gonadotropins.

Question Number	123.	Correct Option	b

Explanation

consumers are not autotrophs. they are heterotrophs bacteria and fungi are decomposers.

Question Number	124.	Correct Option	b

Explanation

definition of genetic drift.

Question Number	125.	Correct Option	a

Explanation

If all members of a population are homozygous for the same allele, that allele is said to be fixed in a gene pool.

Question Number	126.	Correct Option	a

Explanation

fact

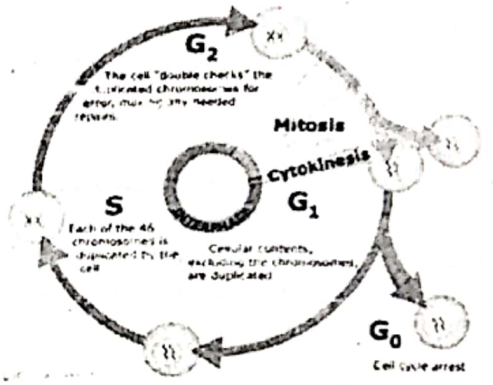
Imperfect fungi cause ringworm and athlete's foot.

Aspergillus causes aspergillosis in person with defected immune system.

Aflatoxins are mycotoxins produced by fungi that might cause cancer.

Question Number	127.	Correct Option	c

Explanation



Question Number	128.	Correct Option	b

Explanation

Water moves from high concentration to low concentration through passive transport in plants.

Question Number	129.	Correct Option	d

Explanation

Decrease of FSH and increase in estrogen causes pituitary to secrete luteinizing hormone which induces ovulation.

Question Number	130.	Correct Option	a

Explanation

At the 5' end, a cap is added consisting of a modified GTP. This is the beginning of transcription.

The 5' cap is used as a recognition signal for ribosomes to bind to the mRNA. At the 3' end, a poly(A) tail of 150 or more adenine nucleotides is added

Question Number	131.	Correct Option	d

Explanation

Progesterone is secreted by placenta and acts as pregnancy maintaining hormone. When child birth is near, progesterone secretion stops

Question Number	132.	Correct Option	a

Explanation

true statements

A. A method of ...ucing millions of seedlings in a limited amount of space

B. One of the ...ethods of micro-propagationa is tissue culture

C. If correct p...portions of auxins and cytokinins are added to a liquid medium, m...ny new shoots will develop

D. It be used ...ommercially

Question Number	133	Correct Option	a

Explanation

C – H bonds are considered to be energy rich. They are the main source of energy in lipids.

Question Number	1...	Correct Option	b

Explanation

fertilization of ovum with sper... takes place in proximal part of oviduct. The fertilized egg that en...s uterus where it is implanted for further growth and develop...ent.

Question Number	135.	Correct Option	c

Explanation

Turner syndrome ...on is not recognized until adolescence,and many men with Klinefelter syndrome are never diagnosed.

Down syndrome is recognised at birth.

In girls who have Turner syndrome, one copy of the X chromosome is missing, partially missing or altered.

Question Number	136.	Correct Option	c

Explanation

wood forest is the climax community and is stable and diverse.

Question Number	137.	Correct Option	a

Explanation

foreign genes are inserted in animal egg either by micro injecting with hand or by vortex mixing.

Question Number	138.	Correct Option	b

Explanation

Restriction enzymes are named after their ability to restrict the growth of virus in bacteria.

Other options are the functions of plasmids.

Question Number	139.	Correct Option	a

Explanation

Analogous organs are structurally different but functionally alike. Examples are wings of bats, birds and insects.

Homologous organs are functionally different but structurally alike. Examples are arms of man, forelimb of cat, flipper of whale

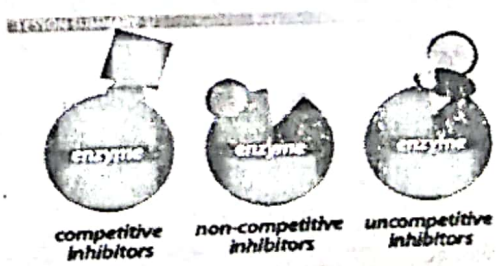
Question Number	140.	Correct Option	a

Explanation

Competitive inhibitors have structure similar to the substrate and binds to the active or catalytic site of the enzyme preventing the substrate to bind there.

Non- competitive enzymes attach to the enzyme other than the active site and alter the shape of the enzyme such that the substrate is unable to attach at the active site.

Uncompetitive inhibitors bind only to the enzyme substrate complex not free enzyme.



Question Number	141.	Correct Option	b

Explanation

Apoplast is the system of adjacent cell walls continuous throughout the plant roots. It becomes discontinuous in the endodermis of roots due to the presence of casparian strips.

The diffusion of ions along with water also takes place by mass flow along apoplast pathway.

Symplast is the system of interconnected protoplast in the root cells. The neighboring cells are connected through plasmodesmata. It is the cytoplasmic projections that extend through pores in adjacent cell walls.

Mostly sugar travels through this pathway.

Question Number	142.	Correct Option	d

Explanation

It is the first stage of xerosere succession.

Question Number	143.	Correct Option	a

Explanation

Fact

scientist have discovered that there exists a stain of bacteria that produces phenylalanine. phenylalanine is used to make aspartame which is also known as nutrasweet.

Question Number	144.	Correct Option	c

Explanation

fact.

leeches secret anticoagulant that is passed into the wound and allows smooth flow of blood into the digestive system of the leech.

Ancylostoma duodenale also secrete anticoagulant during feeding from the host. it prevents the wound from healing and bleeding continues.

Question Number	145.	Correct Option	a

Explanation

Explanation: kidney stones are mainly calcium oxalate about 70 – 80 %. Uric acid stones are less about 5 – 10 %.

Question Number	146.	Correct Option	a

Explanation

E. coli is present in large intestine that is responsible for the formation of vitamin K there.

It can help digestion processes, food breakdown and absorption, and*vitamin K*production.

Question Number	147.	Correct Option	a

Explanation

fact

Fluid secreted by sertoli cells provide protection, nourishment, and liquid medium to the sperms while they are in tubules.

Question Number	148.	Correct Option	a

Explanation

Active siteis the region of an enzyme where substrate molecules bind and undergo a chemical reaction.

Active site has following regions:

Binding site -- forms temporary bonds with the substrate

Catalytic site -- catalyses a reaction of that substrate

Question Number	149.	Correct Option	c

Explanation

Explanation: hinge joint: 2 directions movement, as in elbow and knee joint. Pair of muscles are arranged in the same plane as that of joint.

Ball and socket joint: several directions movement as in shoulder and hip joint. Atleasr 2 pairs of muscles present perpendicular to each other.

Pivot joint: not freely movable as in between radius and ulna of pelvic girdle

Question Number	150.	Correct Option	a

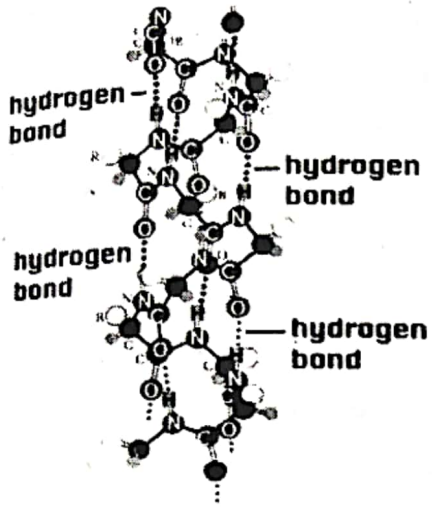
Explanation

at the age of 45 – 50, the female stops having menstrual cycle, this complete stop of menstrual cycle is called menupause.

Question Number	151.	Correct Option	a

Explanation

fact



Question Number	152.	Correct Option	d

Explanation

All are the functions of mesosomes. the cell membrane invaginate into the cytoplasm to form mesosomes.

Question Number	153.	Correct Option	a

Explanation

fact

terpenoids are polymers of isoprenoid.

Question Number	154.	Correct Option	a

Explanation

It is made of soluble shield of macromolecules.

Question Number	155.	Correct Option	a

Explanation

pseudocoelom develops from blastocoel of the embryo and it is bounded externally by muscles and internally by cuticle of intestine.

Question Number	156.	Correct Option	c

Explanation

Pleiotropy: A single gene controlling or influencing multiple phenotypic traits

Epistasis: When a gene at one location (locus) alters the phenotypic expression of a gene at another locus

Question Number	157.	Correct Option	d

Explanation

Explanation:

Our bodies have to keep three important matters balanced, they are:

1. Temperature

- Lower body temperature decreases the metabolism of the body whereas higher body temperature denatures proteins and enzymes which assist in body functions.
- So the constant body temperature should be maintained.

2. Water Potential:

- The change in water potential decreases the efficiency of the cell.

3. Concentration of Glucose:

- Glucose is the energy source of the cell which is the fuel for respiration.
- Decrease in glucose concentration causes respiration to slow down or stop.
- Too much glucose causes water to move out of the cell through osmosis and disturbing the metabolism of the cell.

Question Number	158.	Correct Option	c

Explanation

Energy is stored in the form of carbohydrates produced as the result of photosynthesis.

Question Number	159.	Correct Option	d

Explanation

cnidaria belongs to class radiata

Question Number	160.	Correct Option	d

Question Number	161.	Correct Option	c

Explanation

- With is used to describe the presence or company of someone.

Sample sentence: *I will go with you for grocery.*

-At is used with particular points of clock, day or week.

Sample sentence: *I will eat lunch at 2 pm.*

-From is used to the material which is used to make anything.

Sample sentence: *This table is made from wood.*

-Of is used to show possession or belonging.

Sample sentence: *You are one of those who eat alot.*

Hence, the most suitable option is from.

Question Number	162.	Correct Option	c

Explanation

- Lunatic means crazy or insane.

Sample sentence: *His behaviour is bizarre, I find him lunatic.*

-Intelligent means smart.

Sample sentence: *He is so intellegent, he solved that problem in no time.*

- Clever means sharp, skillful.

Sample sentence: *I am amazed of his cleverness, he made it happen and didn't let anyone know.*

- Insane means crazy or loony.

Sample sentence: *His reactions are out of propotion, he is an insane man.*

- Quiet means who doesn't talk.

Sample sentence: *He never speaks, such a quiet personality.*

Hence,insane is the suitable answer.

Question Number	163.	Correct Option	c

Explanation

- On is used when the subject is in contact with the upper surface or part of a thing.

Usage: *He was sitting on his desk.*

-Beneath means in or to a place that is lower.

Usage: *I hid the keys under the floor mat.*

-Under means located below or beneath something.

Sample sentence: *I placed my shoes under the bed.*

-In is used when the subject proposed is abstract.

Sample sentence: *I am sitting in the car.*

Hence,in is the suitable answer.

Question Number	164.	Correct Option	b

Explanation

- Latent means something present but not visible.

Sample sentence: *Finger prints are latent evidence at crime scenes.*

- Late means to do something after the expected time.

Sample sentence: *Please be on time, don't be late, the ceremony starts at8 p.m.*

-Covert means hidden.

Sample sentence: *The covert act of enemy showed their cowardness.*

-Pending means something about to happen.

Sample sentence: *My request is still pending for approval.*

-Overt means something open or not hidden.

Sample sentence: *Aleem is very expressive, he overtly expresses his affection for his parents.*

Therefore, option B is most appropriate.

Word	Synonym	Antonym
Latent	Hidden, Underlying	Apparent, Clear
Covert	Private, Undercover	Open, Public
Overt	Apparent, Patent	Obscure, Secret

Question Number	165.	Correct Option	c

Explanation

- Nihilist is a person who has a view that life is meaningless and ignores or rejects all religious principles and values.

-Orthodox is a person who is religious.

-Scrupulous person is the one who has high moral values.

-Pessimist is a person who is negative about everything.means to stay positive.

As nihilist is the one who is rejecting all moral and religious values so options (a) and (b) are not suitable too. Hence, optionCis correct.

Question Number	166.	Correct Option	b

Explanation

- Despite is used to show a contrast between something.

- With is used to describe the presence of someone.

- In is used to show location or position inside something.

- Of is used to show possession, belonging or origin.

Hence, despite is the suitable answer.

Question Number	167.	Correct Option	b

Explanation

English rules for You and I / You and me:

1) Subjective and Objective pronouns:

-I, she, he ,they, we are subjective pronouns. Subjective pronouns in a sentence are the doers, they perform the action in the sentence. Therefore, if two people are performing an action in a sentence then use*You and I.*

For example:

- You and I are best friends.

- You, him,her,me,it,us,them are object pronouns. Object pronouns tend to be the receiver in a sentence. Therefore, if two people are receiving the action it should be *you and me.*

For example:

-My parents will buy you and me cinema ticket.

2) Preposition Rule

Preposition helps us to identify which pronoun shall we use in a sentence. Prepositions such as*at, by, between, to, from*are followed by an object pronoun (me, you, him,her).

For example:

-The secret should remain between you and me.

- Myself is a reflexive pronoun and is used when the person speaking is subject and object.

For example:

- I wrote a mail to myself. (I is the subject, my self is the object)

Hence, me is the right choice.

Question Number	168.	Correct Option	d

Explanation

- Roil means to feel angry, irritated or annoyed.

- Calm means placid, peaceful.

- Humor means happiness.

- Satisfy means content or fulfillment of desires.

- Agitate means disturbed, aroused or angry.

Therefore, option D is most appropriate.

Word	Synonym	Antonym
Roil	annoy, agitate	help, calm
Humor	banter, joke	sad, tragedy
Agitate	convulse, disturb	tranquilize, calm

Question Number	169.	Correct Option	c

Explanation

- Negligent means not to perform one's duty with care.

-Obedient means to comply.

-Irresponsible means not capable of fulfilling own duty.

-Mindful means to be careful.

-Alertmeans to be active.

Hence, irresponsible is the most appropriate synonym.

Question Number	170.	Correct Option	c

Explanation

-Preposition "along" indicates from one end to the other.

Usage: *I walked along the road.*

- Preposition "within" is used to imply inside of or not further than a geographical boundary.

Usage: *The accused man said, his action falls within the ambit of law.*

- Preposition "in front of" means directly before.

Usage: *I was standing in front of him but he could not see me.*

- Preposition "up" implies, towards a higher position.

Usage: *I climbed up the hill.*

Hence,in front ofis an approproate preposition to fill in the blank.

Question Number	171.	Correct Option	c

Explanation

Onerous means oppressive, burdensome or distressing.

- Single means only one.

- Omnipotent is the virtue of having unlimited power.

- Honorable means immense respect.

- Cumbersome means difficult.

Therefore, option D is the most appropriate answer.

Word	Synonym	Antonym
Onerous	harsh, troublesome	trivial, helpful
Omnipotent	divine, mighty	weak, impotent
Cumbersome	difficult, tiresome	aiding, graceful

Question Number	172.	Correct Option	b

Explanation

Anomie is a personal state of isolation and anxiety.

-Fairness is ability to make decisions free from dishonesty.

-Isolation is to be alone or being disliked.

-Depression is a sad feeling.

-Lawfulness is a quality of conforming to law.

Hence, the suitable optionis isolation.

Question Number	173.	Correct Option	c

Explanation

Xenophobic means hatred towards a foreign culture, belief etc.

Sample sentence: *His xenophobic traits were depicted by her extremist remarks on western culture.*

- Heroic reflects bravery.

-Sample sentence: *The police man made heroic efforts to save the old lady.*

-Scary means frightening.

Sample sentence: *I don't like horror movies because they scareme.*

-Narrow-minded is a person who is not willing to listen and accept other peoples views.

Sample sentence: *He isnarrow-minded, he abhores dissidence.*

-Shy is being reserved.

Sample sentence: *That kid is shy, whon I asked his name he started to blush.*

Therefore, option Cis most appropriate.

Question Number	174.	Correct Option	a

Explanation

- Regime means rule or prevailing system.

-System is a coordinated body of methods ora scheme or plan of procedure.

-Time refers to duration or limited time interval.

-Action is to perform.

-Manager is a person responsible to organize th resources and affairs of an organization.

Therefore, option A is the most appropriate.

Question Number	175.	Correct Option	d

Explanation

- Sitcom is a type of comedy where a comedian tells jokes to the audience.

- Action means something done or performed.

-Thriller is a suspenseful adventure story.

-Action is a type of genre that involves much fighting.

-Sci-fi is a genre of speculative fiction.

So,situation comedy is the best answer.

Question Number	176.	Correct Option	c

Explanation

- Over is used when crossing from one side to the other or when going up and then down.

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

-Throughout means to the whole area.

Usage: *There was a motorway throughout.*

-On is used with dates or to refer an occasion.

Usage: *I will wear a suit on your wedding.*

- In is used to indicate a location or position of something.

Usage: *Put your mobile in your pocket.*

Hence,throughout is the suitable answer.

Question Number	177.	Correct Option	b

Explanation

- Inside is used to indicate something that is physically enclosed in something.

Usage: *The letter is inside the envelope.*

- Within means inside the limits that are non-physical in nature, i.e time or distance.

Usage: *I was commandedto stay within the building no matter what.*

- In is used to indicate location of something.

Usage: *Put you mobile in your pocket.*

- On is used to refer to an occasion.

Usage: *I will wear a suit on your wedding.*

Hence,within is the suitable option.

Question Number	178.	Correct Option	a

Explanation

- Preposition "on" is use to express a surface of something or used to refer to dates or occasions.

Usage: *I placed my phone on table.*

- Preposition "onto" indicates the movement towards a particular place or position.

Usage: *I slipped as I stepped onto the wet floor.*

- Preposition "against" implies in opposition with.

Usage: *Entire society was against my idea as a result I couldn't succeed in my endeavor.*

- Preposition "into" indicates the inner part.

Usage: *We need to look into this matter wisely if we are to solve it.*

Hence,ontois the suitable preposition to fill in the blank.

Question Number	179.	Correct Option	a

Explanation

- Preposition "to" indicates the direction or position, indicates the receiver of an action and used in telling the time.

- Preposition "with" indicates the presence or company of somebody.

- Preposition "before" means earlier than.

- Preposition "by" is used to indicate proximity.

So the best choice is A.

Question Number	180.	Correct Option	c

Explanation

-Preposition "for" is commonly used to indicate a reason for something, also for duration and for exchange.

Usage: *I will sell you two shirts for Rs.200.*

- Preposition "concerning" indicates involvement of someone or somebody.

Usage: *He asked me several questions concerning the economy.*

- Preposition "about" means, concerning, related to or in regard to.

Usage: *What is the this script about?*

- Preposition "besides" indicates addition or apart from something or somebody.

Usage: *I like to play badminton besides tennis.*

Hence, optionCis the most appropriate.