2015

PRACTICE SOLVED PAPER-5

1. A body starting from origin first of all moves 15m towards North then 10m towards East and finally moves 20m vertically upward. What is its total displacement?
   a. 45m
   b. 16.9m
   c. 36.9m
   d. 26.9m
2. The percentage of cosmic rays absorbed by average person is
   a. 13%
   b. 6.5%
   c. 21%
   d. 32%
3. Binding energy per nucleon is highest for
   a. cobalt
   b. uranium
   c. iron
   d. cadmium
4. Range of the projectile will be maximum when 2Θ=
   a. 90°
   b. 30°
   c. 45°
   d. 60°
5. Significant figures in 0.00304 are
   a. 3
   b. 5
   c. 6
   d. 2
6. The heat supplied to the gas at constant volume is
   a. $mC_v\Delta T$
   b. $mC_p\Delta T$
   c. mC_v
   d. $mC_v/\Delta T$
7. Which of the following materials do not undergo plastic deformation?
   a. Ductile
   b. brittle
   c. Plastic
   d. both a & c
8. A circular bar 2.5 m long and cross section area $10^{-3}m^2$ is stretched 1.5mm by a force of 100N in the elastic region. What is the value of modulus of elasticity?
   a. 133MPa
   b. 166MPa
   c. 199MPa
   d. 100MPa
9. 1st law of thermodynamics deals with
   a. quality of energy
   b. quantity of energy
   c. both quantity and quality of energy
   d. none of these
10. Conversion of heat energy completely into work violates
    a. Zeroth law of thermodynamics
    b. 1st law of thermodynamics
    c. 2nd law of thermodynamics
    d. Both b & c
11. Which of the following angle pairs would have equal range
    a. 45°,25°
    b. 60°,40°
    c. 75°,15°
    d. 35°,50°
12. Binding energy of tritium nucleus having experimental mass 4.45×10-27kg is given by
    a. 2.3×10^{8}eV
    b. 3.2×10^{8}eV
    c. 2.3×10^{10}eV
    d. 3.2×10^{10}eV
13. Errors which result when numbers having limited significant figures are used to represent exact numbers are called
    a. random errors
    b. truncation errors
    c. round off errors
    d. figures errors
14. If we have a solenoid of n turns per half unit length and provide current I to it, then the strength of its magnetic field B will be
    a. $2\mu_o nI$
    b. $\frac{1}{2}\mu_o nI$
    c. ILB
    d. $\mu_o n^2 I$

5. Which of the following pair has same units

a. stress, strain
b. pressure, Young's modulus
c. torque, moment of inertia
d. all of these

6. Person A and B individually stretched ropes of different radii. A subjected the first rope having a radius of 1.7×10^{-3}m to a stretching force of 220 Newton while B stretched the second rope with a radius of 2.4×10^{-3} m. If both of the ropes experience the same stress, what stretching force is exerted by B on the second rope?

a. 237 N
c. 397 N
b. 357 N
d. 438 N

17. A car accelerates from rest at 4 m/s^{-2}. What is the velocity of the car after 4 seconds?

a. 4m/s
c. 16m/s
b. 8m/s
d. 1m/s

18. Speed of sound in vacuum is

a. 331m/s
b. 280m/s
c. 443m/s
d. zero

19. Result of a measurement is given as M ± ΔM, fractional uncertainty is given by

a. ± ΔM
b. ΔM/M
c. M/ ΔM
d. (ΔM/M)×100

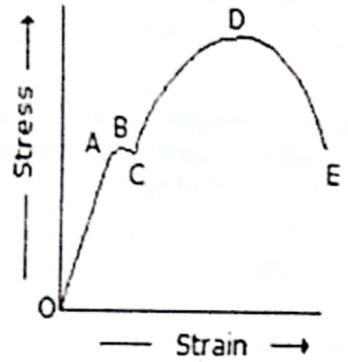
20. A measurement during an experiment results value of 10±0.1 units. What is the fraction uncertainty associated with result?

a. ±0.01
b. 0.01
c. 0.1
d. 1

21. If the resistances of 2Ω and 5Ω are connected in parallel. Equivalent resistance will be

a. 2/5Ω
b. 10/7Ω
c. 7/5Ω
d. 7Ω

22. Stress-strain diagram for a ductile material under tension is shown below in the figure, examine to choose that which type of the stress occur at point D ?



a. yield stress
b. shear stress
c. breaking stress
d. ultimate tensile stress

23. If a vehicle is moving towards a passenger then the frequency of horn received by passenger will be _____ the actual horn sound frequency.

a. less than
b. equal to
c. either less or equal
d. greater than

24. According to kinetic theory of gases, the translational kinetic energy of a molecule is proportional to

a. T
b. T^2
c. 1/T
d. $1/T^2$

25. The kinetic energy per kg molecule of any gas at absolute temperature T is equal to

a. ½ RTK
b. 2KT
c. 3kT/2
d. 3RT/k

26. Conventional current is shown by direction of

a. positive charges
b. electrons
c. neutrons
d. negative charges

27. Diffraction through a narrow slit causes maxima and minima. The region between two consecutive minima will be
    a. bright
    b. dark
    c. either of a or b
    d. superimposed

28. Distance between crest and trough is 5 cm and 24/7 waves passes a point in 2 s. Find speed of wave?
    a. 3/7 m/s
    b. 3/35 m/s
    c. 10m/s
    d. 12m/s

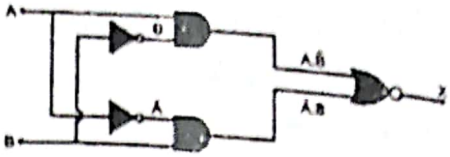
29. A supervisor uses a shaft and pulley mechanism with a 25.0m long cable to send down a 15kg box of goods to assist the needs of the labourers. The cable stretched to a length of 25.05m. If cable has a diameter of 18mm, what is the Young's Modulus of the cable used by the staffs?
    a. 301MPa
    b. 349MPa
    c. 413MPa
    d. 289MPa

30. Doubly charged helium nuclei having velocity in the range of 1500 to 2500m/s enters into a chamber where both electric and magnetic fields are applied. With which velocity will the particles go straight and undeviated through the chamber? Value of electric and magnetic field in the chamber are 200V/m and 0.1T resp.
    a. 1600m/s
    b. 1800m/s
    c. 2000m/s
    d. 2200m/s

31. Speed of electron in second Bohr's atomic orbit is
    a. 5.2x106m/s
    b. 7.2x105m/s
    c. 1.1x106m/s
    d. none of these

32. Percentage left after 10 half-life is given as
    a. (N×2n)x100
    b. (N/2n)x100
    c. (2n/N)x100
    d. none of these

33. Consider the following figure. Inputs are A=1 and B=1. What is value of X?



    a. 0/1
    b. 0
    c. 1
    d. None of these

34. The increase in entropy of a system represents
    a. increase in availability of energy
    b. decrease in pressure
    c. increase in temperature
    d. degradation of energy

35. Avogadro's law gives relation between:
    a. Temperature and pressure
    b. Volume and temperature
    c. Volume and number of moles
    d. Volume and pressure

36. Equation of continuity is based on
    a. law of conservation of mass
    b. law of conservation of energy
    c. law of conservation of momentum
    d. None of these

37. CAT scanner measure the
    a. amount of X-ray absorbed
    b. intensity of X-rays
    c. penetration of X-rays absorbed
    d. none of these

38. The change of entropy, when heat is removed from the gas is
    a. positive
    b. negative
    c. either positive or negative
    d. none of these

39. Boltzmann constant is equal to:
    a. N_A/R
    b. R/N_A
    c. RN_A
    d. None of the above

40. What is the energy difference between two levels of transition?
    a. $E = hf$
    b. $E = hcf$
    c. $E = hc/\lambda$
    d. both a & c

41. A venture meter is used to measure
    a. differential pressure
    b. speed of the liquid flow
    c. discharge
    d. mass flow rate

42. An electron jumps from an energy level – 3x10-20 J to –1x10-19 J. What is the frequency of emitted light?
    a. 47.4Hz
    b. 75.8Hz
    c. 70.2Hz
    d. 85.7Hz

43. If the temperature of a gas is increased, it's viscosity will be
    a. increased
    b. decreased
    c. none of these
    d. remains constant

44. Heavier the anode, _____ would be wavelength of X-rays.
    a. larger
    b. constant
    c. smaller
    d. infinite

45. **A vapour particle having diameter 0.03cm moves down through a gas. Find its terminal velocity if kinematic viscosity of the gas is $2.5\times10^{-6}m^2/s$?**
    a. 1.16m/s
    b. 1.96m/s
    c. 2.56m/s
    d. 3.26m/s

46. Which is not a step of radical halogenation of alkanes?
    a. Bond cleavage forms two radicals
    b. One radical reacts to form a sigma bond.
    c. Two radical reacts to form a sigma bond.
    d. One radical reacts and one radical is formed

47. Which is not a single-bond functional group?
    a. Amines
    b. Alcohols
    c. Esters
    d. Ethers

48. Why do transition metals undergo a color change?
    a. The ability of ligands to split the d-orbital energy of the metal to change color.
    b. The ability to create attractions between ligands to form colors.
    c. It's because of the incompletely filled d-orbital.
    d. The ability to produce color by forming ionic bond between ligands.

49. Ozone layer protects us from harmful radiation of the sun. How many ozone molecules are left in 10 L at 0°C and 0.5 atm after we introduced $1x10^{18}$ molecules of CFC. One CFC molecule depletes 100,000 ozone molecules.
    a. 3.2×10^{22} ozone molecules
    b. 0.32×10^{23} ozone molecules
    c. 1.34×10^{24} ozone molecules
    d. 0.32 ozone molecules

50. We can prepare an alcohol using an ester. What is typically the reagent used for ester to break down to alcohol?
    a. NaBH4
    b. LiAlH4
    c. NaClO
    d. Pd

51. 1 mol of Nitrosyl chloride (ONCl) gas had undergone a decomposition in a 2-L container. At equilibrium, 7% was dissociated to produce nitrogen oxide gas and chlorine gas. What was the value of kc if the temperature was at 450K?
    a. 9.9×10^{-2}
    b. 3.45×10^{-3}
    c. 7.32×10^{-3}
    d. 9.28×10^{-4}

52. Heroin is an opioid prepared from reacting an acid anhydride with morphine.

What do you call this process?

a. Anhydration
b. Acetylation
c. Carboxylation
d. Acylation

53. When an ethanol is reacted with water under acidic conditions in the presences of potassium permanganate, the manganate (VII) will be reduced to

a. Manganese (VI) ion
b. Manganese dioxide
c. Manganese (III) ion
d. Manganese (II) ion

54. Which of the following repulsion is the greatest?

a. Lone Pair – Lone Pair
b. Bond Pair – Bond Pair
c. Bond Pair – Lone Pair
d. Lone Pair – Bond Pair

55. Which of the following is false about greenhouse effect?

a. Some solar radiation is reflected by Earth and the atmosphere
b. Some radiation is absorbed by Earth's surface and warms it
c. Reflected radiation of the sun from the surface is short-wavelength radiation
d. Some long-wavelength radiation is absorbed by the greenhouse gases

56. Disproportionation is a reaction in which one of the reactant is both oxidized and reduced simultaneously forming two products. The disproportionation of bromine gas with cold sodium hydroxide is possible:

Br (g) +2 NaOH (aq)⟶ NaBr (aq) + NaBrO (aq) + H O(l)

Identify the following which products undergoes oxidation or reduction

a. NaBr – Reduction NaBrO – Oxidation
b. NaBrO – Reduction NaBr – Oxidation
c. NaBr – Oxidation H2O – Reduction
d. NaBrO – Reduction H2O – Oxidation

57. We usually see mushrooms popping out of nowhere after thunderstorm. Why do mushrooms thrive after lightning?

a. The parcel of nitrogen in the air went down after lightning.
b. Because of the ionization of nitric acid to nitrates in the soil.
c. Because of the humidity and light
d. Lightning activates the ammonium salts in the soil.

58. What mass of the air would occupy 386.436 L at 5.103 atm and 26.67°C?

a. 2250.721 g
b. 2174.12 g
c. 2309.52 g
d. 2444.12 g

59. Which of the following are polar molecules?

i. H_2S

ii. CCl

iii. NH_3

iv. BeF_2

a. i and iii
b. ii and iv
c. iii and iv
d. i and ii

60. Convert one million of sulfur dioxide molecules to mass in grams.

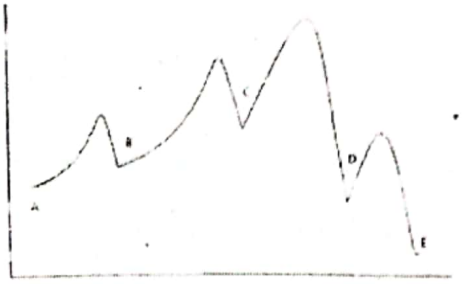
a. 1.06×10^{-16} g
b. 1.06×10^{-12} g
c. 1.06×10^{-13} g
d. 1.06×10^{-6} g

61. Which of the following will give triiodomethane in iodoform test?

a. Methanol
b. Ethanol
c. Propanol
d. Butanol

2

62. In the given Activation Energy Diagram:Which of the following is the rate-determining step?



a. A-B
b. C-D
c. D-E
d. B-C

63. What is the maximum number of valence electrons that Capsaicin ($C_{18}H_{27}NO_3$) can achieve in octet?

a. $230e^-$
b. $115e^-$
c. $392e^-$
d. $156e^-$

64. A student conducted a flame test. He got a strip of magnesium ribbon. With the use of crucible tong, he placed the strip of magnesium ribbon on the flame of Bunsen burner. The strip lighted up with intense white flame and continued to burn in the air. What could be the product that was formed?

a. $Mg(OH)_2$
b. MgO_2
c. MgO
d. Mg_2O

65. What product will produce if benzene is reacted with nitric acid?

a. TNT
b. Nitrobenzanol
c. Nitrobenzene
d. Acylbenzene

66. Arrange the noble gases in decreasing density

a. He<Ne<Ar<Kr<Xe<Rn
b. He<Ne<Ar<Xe<Kr<Rn
c. Rn<Xe<Kr<Ar<Ne<He
d. Rn<Xe<Ar<Kr<Ne<He

67. Benzene will undergo

a. Elimination reaction
b. Addition reaction
c. Substitution reaction
d. Condensation reaction

68. Carboxylic acid is often derived with the use of Tollen's reagent from the oxidation of what organic compound?

a. Alcohols
b. Aldehydes
c. Ethers
d. Ketones

69. Sulfuric acid and nitric acid are two of the major contributors of acid rain that came mostly from fossil fuel combustion. What makes them unique among other contributors?

a. Both ionizes to hydronium ions
b. All of the above
c. Both are strong acids
d. Both are anthropogenic

70. What is the name of the alkyl halide that has detrimental effects on liver and kidneys when inhaled or ingested but it is still widely used as fire extinguishers, precursors of refrigerants, and cleaning agents?

a. Chloromethane
b. Halothane
c. Chloroform
d. Carbon tetrachloride

71. What is the oxidation half-reaction of

$$pb(s) + 2FeCl_3(aq) \rightarrow 2FeCl_2(aq) + PbCl_2(aq)$$

$$Fe^{3+}(aq) + e^- \rightarrow Fe^{2+}(aq)$$
$E^0 = +0.771V$

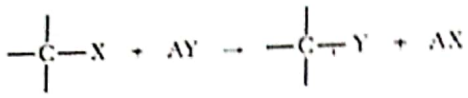
$$Pb^{2+} + 2e \rightarrow Pb(s)$$ $E^0 =$ -0.126V

a. $Pb(s) \rightarrow Pb^{2+} + 2e^-$
b. $Pb^{2+} + 2e^- \rightarrow Pb(s)$
c. $Fe^{2+}(aq) \rightarrow Fe^{3+}(aq) + e^-$
d. $Fe^{3+}(aq) + e^- \rightarrow Fe^{2+}(aq)$

72. Choose which has the highest boiling point

a. CH_4 B.
b. CH_3Cl
c. CH_3NH_2
d. CH_3CH_3

73. What type of organic reaction does this represent?



a. Addition reaction
b. Elimination reaction
c. Condensation reaction
d. Substitution reaction

74. Calculate the vapor phase of A for the mixture A and B at 70°C at 50 kPa. Assume the mixture behaves ideally. The vapor pressures of A and B at 70°C are 100 kPa and 15 kPa, respectively.

a. 18% A
b. 41% A
c. 82% A
d. 59% A

75. SN_2 reaction means

a. It is a two-step reaction.
b. It has racemic mixture of two products.
c. It undergoes bimolecular transition state.
d. It is sp2 hybridized

76. One of the factors why we age is through oxidation. That's why most doctors recommend to drink antioxidants to keep us young and healthy. What are antioxidants?

a. are oxidizing agents.
b. are reducing agents.
c. are false advertisements.
d. are free radicals.

77. Transition metals have

a. Magnetic properties
b. Incompletely filled d-orbital system
c. distinctive coloring
d. all of the above

78. What is the E^o_{cell} of this reaction:

$$Br_2(l)\left|\begin{matrix}Br^-\\1M\end{matrix}\right|\left|\begin{matrix}H^-\\1M\end{matrix}\right|H_2(g)$$

$Br_2(l) + 2e^- \longrightarrow 2Br^- \quad E^0 = +1.07V$

$2H^+(aq) + 2e^- \longrightarrow H_2 \quad E^0 = 0V$

a. –0.535V
b. +0.535V
c. –1.07V
d. +1.07V

79. How many pi bonds are there in $N_2(g)$?

a. 1
b. 2
c. 3
d. 4 because of resonance structure

80. For this electrochemical reaction:

$$X^{n+} + ne \rightarrow X \quad E^0 = +0.80V$$

$$Y^{n+} + ne \rightarrow Y \quad E^0 = -2.37V$$

What is the cell reaction that favors forward reaction?

a. $Y^{n+} + X \rightarrow X^{n+} + Y$
b. $X^{n+} + Y \rightarrow Y^{n+} + X$
c. $X^{n+} + Y^{n+} \rightarrow Y + X$
d. $Y + X \rightarrow X^{n+} + Y^{n+}$

81. In 1951, Roy J. Plunkett, an American DuPont chemist, was awarded the Scott Medal for his accidental invention. During this time, each guest received a tin coated muffin with what synthetic organic halide that is commonly seen in the kitchen?

a. PVC
b. Chloromethane
c. Teflon
d. Freon

82. Which of the following hydrocarbon is an aromatic compound?

a. Hexane
b. Cyclohexane
c. Glucose
d. Phenol

83. How many electron(s) will a halogen atom gain from alkali earth metals

a. 1
b. 0
c. 2
d. 3

84. A group that can destroy ozone is NOx.In the process, the ozone undergoes depletion. What is the ratio of ozone molecules to oxygen molecules in this process?

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

The mechanism of catalysis:

i. $A + catalyst \longrightarrow A(catalyst)$

ii. $A(catalyst) + B \longrightarrow AB + catalyst$

$A + B \longrightarrow AB$

Which of the following is false about these reaction?

a. Catalyst is consumed in the overall reaction.
b. A(catalyst) is the reaction intermediate
c. A(catalyst) is produced on step (i) and consumed on step (ii)
d. Catalyst is regenerated in the reaction.

6. Linear aliphatic hydrocarbons are the following except:

a. Saturated
b. Unsaturated
c. Branched
d. Antiaromatic

87. The decomposition of 0.80 mols of H_2CO_3 took 3 minutes to reduce to 0.40 mols to form CO_2 and H_2O in 1-L container. What is the rate of formation of CO_2?

a. 0.13 mols/min
b. –0.13 mols/min
c. 0.4 mols/min
d. –0.4 mols/min

88. Oxidation of aldehydes will have a

a. Decrease in the number of C–H bonds
b. Increase in the number of C–H bonds
c. Increase in the number of bonds in C=O bonds
d. Decrease in the number of bonds in C=O bonds

89. Which of the following has the longest in bond length?

a. C-H
b. O-H
c. F-H
d. N-H

90. Which is the most abundant greenhouse gas?

a. Water vapor
b. Methane
c. Ozone
d. Carbon dioxide

91. Submerged plants die due to eutrophication. The reason is

a. less water availability
b. less oxygen in water
c. lack of sunlight
d. death of the fish on which they feed

92. Van Mohl proposed

a. Starch sugar hypothesis
b. Pressure flow theory
c. Potassium ions influx theory
d. Transpiration pull

93. Heart attack is also known as

a. Cerebral infarction
b. Myocardial infarction
c. Hypertension
d. Stroke

94. Schistosoma resides in _____ of the host organism

a. Kidney
b. Intestine
c. Blood
d. Liver

95. _____ is the first portion of respiratory tract that has gas exchanging capabilities

a. Terminal bronchioles
b. Respiratory bronchioles
c. Alveoli
d. Bronchi

96. Water and salts from the food is absorbed into the blood stream in

a. Ileum
b. Duodenum
c. Large intestine
d. Jejunum

97. Which of the following about human heart is not correct

a. Wall of the heart has 3 layers
b. Atria are thin walled whereas ventricles are thick walled
c. It acts as double pump
d. It is enclosed in single membrane sac

98. The generation which has all the hybrid individuals can be obtained from

a. TT x tt
b. Tt x Tt
c. TT x TT
d. None

99. Effector responds by
    a. Increased temperature
    b. Secretion
    c. Contraction
    d. Both B and C

100. Burning of fossil fuels accounts for the largest human source of _____
    a. CFCs
    b. carbon dioxide
    c. methane
    d. nitric oxide

101. Closing of stomata takes place as the result of
    a. Diffusion of potassium ions out of the guard cells
    b. Active transport of potassium ions into the guard cells
    c. Diffusion of sodium ions into the stomata
    d. Active transport of sodium ions into the stomata

102. Dorsal route ganglion contains
    a. Cell bodies of sensory neurons
    b. Cell bodies of motor neurons
    c. Nerve fibers of sensory neurons
    d. Nerve fibers of motor neurons

103. Lichen and algae are responsible for the formation of
    a. Climax community
    b. Initiator community
    c. Seral community
    d. Pioneers community

104. Follicle atresia is
    a. Breakdown of follicles
    b. Production of follicles by FSH
    c. Occurred in first phase of menstrual cycle
    d. Both A and C

105. A pea plant has purple colored flowers (dominant trait). To check the genotype, which of the following cross is performed
    a. Test cross with homozygous white flowered plant
    b. Test cross with homozygous purple flowered plant
    c. Test cross with heterozygous purple flowered plant
    d. Hybrid cross

106. Which of the following has peptidoglycan cell wall?
    a. salmonella typhi
    b. penicillium
    c. adiantum
    d. all of the above

107. Function of testosterone
    a. Development of hair on body
    b. Causes hoarseness of voice
    c. Production of sperms
    d. All of the above

108. Pairing of homologous chromosomes is called crossing over. This can be seen during which phase?
    a. pachytene
    b. zygotene
    c. leptotene
    d. diplotene

109. The outer membrane of the nuclear envelope is at places continuous with the:
    a. Golgi apparatus
    b. Endoplasmic reticulum
    c. Lysozymes
    d. Peroxisomes

110. Which of the features is exclusive to only Darwin's theory of evolution?
    a. Selective pressure
    b. Heritability
    c. Extinction
    d. Acquired transmission

111. Choose the correct statement
    a. Bones are not supplied with blood vessels
    b. Blood cells can be produced in the cavities of spongy bone
    c. Bones and cartilage consist of living cells embedded in the matrix of protein called keratin
    d. All are correct

112. Saliva is produced by
    a. Parotid gland
    b. Submandibular gland
    c. Sublingual gland
    d. All of the above

113. _____ is called pace maker
    a. Sino atrial node
    b. Atrio ventricular node
    c. Inter ventricular node

114. _____ is the intake of liquid material across the cell membrane
   a. phagocytosis
   b. endocytosis
   c. exocytosis
   d. pinocytosis

115. Chitinous jaw is the property of
   a. leeches
   b. Ancylostoma duodenale
   c. both A and B
   d. Ascaris

116. Reverse transcription makes DNA copies of:
   a. Host RNA
   b. Viral RNA
   c. Host DNA
   d. Viral DNA

117. Which of the following diseases is caused by paramyxoviruses?
   a. Hepatitis
   b. Herpes simplex
   c. Polio
   d. Measles and mumps

118. _____ is responsible for half of the greenhouse effect
   a. CFCs
   b. Carbon dioxide
   c. Methane
   d. Nitric oxide

119. Which of the following is correct in case of active membrane potential?
   a. Extra cellular sodium is high
   b. Extra cellular potassium is high
   c. Intracellular sodium is high
   d. Intracellular potassium is less

120. The right atrium receives _____ blood through _____
   a. deoxygenated; venae cavae
   b. oxygenated; venae cavae
   c. deoxygenated; aorta
   d. oxygenated; aorta

121. Which of the following does not contribute to the opening of stomata?
   a. Lowering of osmotic potential in guard cells
   b. Lowering of solutes in guard cells
   c. Increase in potassium level in guard cells
   d. Transport of water from neighboring cells into guard cells

122. Goblet cells secrete
   a. Gastrin
   b. Hydrochloric acid
   c. Pepsinogen
   d. Mucus

123. The thick and waxy outer covering of leaf is the characteristic of
   a. Hydrophytes
   b. Xerophytes
   c. Mesophytes
   d. Halophytes

124. Biomass of plant is equal to
   a. Gross primary production minus respiratory loss
   b. Gross primary production
   c. Net primary production
   d. Both a and c

125. Plasmid has which of the following characteristics?
   a. It is extrachromosomal DNA
   b. Can replicate independently
   c. It is in circular form
   d. All of the above

126. Which of the following does not belong to phylum arthropoda?
   a. mosquito
   b. tsetse fly
   c. snail
   d. housefly

127. In vortex mixing, eggs are placed in an agitator with
   a. DNA and silicon-carbide needles
   b. DNA and probe
   c. DNA and plasmid
   d. None

128. _____ are supported and protect by neuroglial cells.
   a. Glands
   b. Muscle cells
   c. Nephrons
   d. Neurons

129. Natural selection may result in increase or decrease variations that are
   a. Non heritable
   b. Heritable
   c. Acquired
   d. Both heritable and non heritable

130. Two mono-saccharides are joined through _____ bond called _____ bond.

a. Covalent, Glyosidic
b. Covalent, Disulphide
c. Ionic, Glyosidic
d. Ionic, Disulphide

131. Patient lacks a gene for the trans membrane carrier of the chloride ion in

a. Cystic fibrosis
b. Cystic hygroma
c. AIDS
d. Hypertension

132. The amount of carbon dioxide carried by carboxyhemoglobin is

a. 5%
b. 10%
c. 20%
d. 70%

133. Lymphocytes are produced by

a. Spleen and thymus
b. Tonsils and adenoids
c. Both A and B
d. None of the above

134. Free living carnivorous flatworm?

a. Liver fluke
b. Tape worm
c. Dugesia
d. Schistosoma

135. Genetic code is

a. the sequence of nitrogenous bases on mRNA that codes for a protein
b. a triplet code
c. non overlapping
d. all of the above

136. Which of the following statement about pericardium is not correct

a. It has pericardial cavity which id double membrane sac
b. It protects the heart and prevents it from over extension
c. It is made of cardiac muscles
d. All of the above statements are correct

137. The protein shows conformational changes in which of the following?

a. Simple diffusion
b. Active transport
c. Facilitated diffusion
d. Ion driven active transport

138. How many genes control Rh blood group system?

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

139. Oxyhemoglobin releases up oxygen at

a. Organelle level
b. Cellular level
c. Tissue level
d. Organ level

140. Which of the following is incorrect for Hardy-Weinberg law

a. Non-random mating will reduce chances of evolution
b. There should not be selection
c. Mutations cause changes in genetic frequency
d. Migration changes allelic frequency

141. Ovulation is

a. Discharge of ovum from ovary
b. Production of ovum
c. Fertilization of ovum by sperm
d. None of the above

142. The ultimate source of all changes is

a. Mutation
b. Selection
c. Migration
d. Genetic drift

143. The relaxed phase of heart is called

a. systole
b. diastole
c. distention
d. cardiac cycle

144. Hemodialysis is the process of cleaning the blood by

a. An artificial kidney
b. Filtering it within abdomen
c. Removing glucose from blood
d. Both A and B

145. Acylglycerols are

a. Esters
b. Alcohols
c. Fatty acids
d. None

146. Composition of saliva:

a. Water, mucus, amylase, and sodium bicarbonate
b. Water, mucus, sodium chloride, and sodium bicarbonate
c. Water, mucus, starch, and sodium bicarbonate
d. Water, mucus, starch, and sodium chloride

147. Gastrin is produced in high quantity when there is more _____ in food

a. Proteins
b. Fats
c. Carbohydrates
d. Water

148. Fungi that are responsible for pathogenesis

a. Penicillium
b. Mushrooms morels and truffles
c. Rusts smuts and molds
d. All of these

149. _____ produces the sense of pleasure, punishment or sexual arousal.

a. Cerebrum
b. Cerebellum
c. Midbrain
d. Amygdala

150. Autophagosomes

a. Eat parts of their own cells to generate energy.
b. Eat old and worn out cellular organelles.
c. help in extracellular digestion
d. Both a and b

151. One of the functions of sieve plates is

a. Lowering of hydrostatic pressure
b. Decreasing the resistance
c. Maintenance of pressure gradient
d. None of the above

152. Spiral bacteria comes in the form of:

a. Vibrio
b. spirillum
c. Spirochete
d. All of the above

153. SCID is

a. Common in adults
b. Is due to deficiency of adenosine deaminase
c. It is an immune disorder
d. Both b and c

154. Nitrogen fixation is catalyzed by enzymes. These include

a. nitrogenase and hydrogenase
b. nitrogenase and hydrolaze
c. nitrogenase and peptidase
d. nitrogenase and hexokinase

155. Tay Sach's Disease is caused by absence of enzyme required to breakdown _____

a. Lipids
b. Glycogen
c. Glucose
d. Proteins

156. Bacteria that can grow in both aerobic and anaerobic conditions are called____.

a. Aerobic
b. Anaerobic
c. Facultative anaerobes
d. Microaerophilic

157. Nitrogen fixation is majorly occurred by

a. nitrogen fixing bacteria
b. lightning
c. volcano eruption
d. all of the above

158. Maintenance of constant _____ environment despite fluctuating _____ environment is called homeostasis.

a. External, internal
b. Internal, external
c. Both A and B
d. None of these

159. _____ released from _____ pituitary lays the basis for the child delivery.

a. ACTH; mother's
b. ACTH; fetal
c. Progesterone; mother's
d. Progesterone; fetal

160. Changes in an organism are influenced by what the organism wants or needs and then over many generations the offspring are born with these changes: This statement describes the concept proposed by

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

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

You and ..... are going on a trip.

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

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

The diffident child found it hard to talk to the teacher.

a. Courageous
b. Lazy
c. Restrained
d. Confident

163. Sagacity most closely refers to ..... .

a. stalwart
b. intelligence
c. ignorance
d. skeptic

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

The after-dinner speaker was gesticulating in a strange way.

a. Laughing
b. Dancing
c. Performing
d. Gesturing

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

She has gone so crazy that she has made a hypothetical husband for herself.

a. Theoretical
b. Dreamy
c. Unreal
d. Fake

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

The patient _____ taken medicine before the doctor comes.

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

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

I _____ not accept your opinion.

a. Will
b. Would
c. Should
d. Shall

168. Complete the sentence using the most suitable preposition.

He was too reluctant to walk his dog with a leash and it ran ___

a. Out
b. Of
c. In
d. Off

169. The word closest in meaning to Discrepancy is _____

a. Contrast
b. Similarity
c. Scope
d. Analogy

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

The obtuse student was unable to solve an easy question.

a. Abnormal
b. Failure
c. Insensitive
d. Weak

171. Mesmerize most closely refers to .

a. Memory
b. Fascinate
c. Huge
d. Disgusted

172. Complete the sentence using the most suitable preposition.

The secret ..... this game is that you can use cheat codes.

a. For
b. Within
c. Of
d. In

173. Complete the sentence using the most suitable preposition.

He never throws garbage _____ the dustbin.

a. On
b. Inside
c. To
d. Into

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

Professor find it difficult to comprehend his work because he has a vague handwriting.

a. Jargon
b. Versatile
c. Unclear
d. Lucid

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

He was sentenced to death, he must have committed a heinous crime.

a. Magnificent
b. Gruesome
c. Unpleasant
d. Appealing

176. Incarcerate most closely refers to .

a. Embodied
b. Inclusive
c. Eroded
d. Imprison

177. The word closest in meaning to Brio is _____

a. Spirited
b. Lifelessness
c. Dead
d. Motionless.

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

Grandma is Infatuated with this stupid game that I downloaded in her phone.

a. In love
b. Unconcerned
c. Concerned
d. Uninterested

179. The word closest in meaning to Brambles is _____

a. Rough vines
b. Roots
c. Brimless
d. Brush

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

Ali ..... working on his project since last week.

a. have been
b. Have
c. Has been
d. Has

Answer Key

Question Number	Correct Option
1.	d
2.	a
3.	c
4.	a
5.	a
6.	a
7.	b
8.	b
9.	b
10.	c
11.	c
12.	b
13.	c
14.	a
15.	b
16.	d
17.	c
18.	d
19.	b
20.	b
21.	b
22.	d
23.	d
24.	a
25.	c
26.	a
27.	a
28.	b
29.	d
30.	c

Question Number	Correct Option
31.	c
32.	d
33.	c
34.	d
35.	c
36.	a
37.	a
38.	b
39.	b
40.	d
41.	b
42.	a
43.	a
44.	c
45.	b

Question Number	Correct Option
46.	b
47.	d
48.	a
49.	a
50.	b
51.	a
52.	b
53.	d
54.	a
55.	c
56.	a
57.	b
58.	c
59.	a
60.	a
61.	b
62.	b
63.	a
64.	c
65.	c
66.	a
67.	c
68.	b
69.	b
70.	d
71.	a
72.	c
73.	d
74.	c
75.	c
76.	b

Question Number	Correct Option
77.	d
78.	d
79.	b
80.	b
81.	c
82.	d
83.	a
84.	b
85.	a
86.	d
87.	a
88.	a
89.	a
90.	a

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

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

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

Answers and Explanations

Question Number	1.	Correct Option	d

Explanation

$d = \sqrt{15^2 + 10^2 + 20^2} = 26.9$

Question Number	2.	Correct Option	a

Explanation

13% of cosmic rays are absorbed by an average person.

Question Number	3.	Correct Option	c

Explanation

Binding energy is maximum for iron because it has the most stable nucleus.

Question Number	4.	Correct Option	a

Explanation

Range of the projectile will be maximum when $\Theta = 45^\circ$ or $2\Theta = 90^\circ$

Question Number	5.	Correct Option	a

Explanation

No zeros to left of a significant number is significant.

Question Number	6.	Correct Option	a

Explanation

Heat supplied to mass m of a gas to increase its temperature through ΔT is given as $mC_v\Delta T$.

Question Number	7.	Correct Option	b

Explanation

Brittle materials break just after the elastic limit and do not undergo plastic deformation. Plastic deformation means permanent deformation.

Question Number	8.	Correct Option	b

Explanation

Change in length = $\Delta L = 0.0015m$

Formula for Modulus of elasticity is given as

$$E = Fl/A\Delta L$$

Solving for E, we get

$E = 166MPa$

Question Number	9.	Correct Option	b

Explanation

First law of thermodynamics is all about energy conservation and states that total energy of a system remains constant. Mathematically it is given by

$$\Delta U = Q - W$$

Where ΔU is the change in internal energy Q, is the heat supplied and W is the work done by the system against external factors like pressure.

So it deals with quantity of energy.

Question Number	10.	Correct Option	c

Explanation

According to second law of thermodynamic, it's impossible for an engine to extract heat from hot reservoir and convert it completely into useful work

Question Number	11.	Correct Option	c

Explanation

The formula for calculating the range of projectile is given by

$$R = \frac{v^2 sin2\Theta}{g}$$

So the range will be same when the value of $sin 2\Theta$ will be same

So from our basic rules of trigonometry we know that $sin\Theta = sin(180 - \Theta)$

Therefore

$$sin(2 \times 75) = sin(180 - 2 \times 15)$$

Question Number	12.	Correct Option	b

Explanation

Tritium is an isotope of Hydrogen ${}_{1}^{3}H$

Binding energy is given as

$$B.E = \Delta mc^2$$

where Δm is mass defect which can be calculated as

$$\Delta m = m_p + 2m_n - m_{exp}$$

$$\Delta m = 5.723\times10^{-28}kg$$

$$B.E = (5.723\times10^{-28})\times(3\times10^{8})^2$$

$$B.E = 5.15\times10^{-11}J$$

$$B.E = (5.15\times10^{-11})/(1.6\times10^{-19})$$

$$B.E = 3.2\times10^{8}eV$$

Question Number	13.	Correct Option	c

Explanation

Errors which result when numbers having limited significant figures are used to represent exact numbers are called round off error.

Question Number	14.	Correct Option	a

Explanation

n turns per half unit length means 2n turns per unit length.

Magnetic field produced inside a solenoid is proportional to number of turns per unit length and current. As given by

$B = 2\mu_0 nI$

Question Number	15.	Correct Option	b

Explanation

Stress is Fore per unit area hence its units are N/m^2. Strain has no units since it is a ratio of two lengths given by $\frac{\Delta l}{L}$ where Δl is the change in length and L is the actual length

Pressure is defined as the force per unit area hence its units are N/m^2. Young's Modulus is defined as stress/strain. Since starin has no units because it it a ratio of two similar quantities the unitof Young's Modulus will be the same as stress which is F/m^2

Hence pressure and Young's Modulus have the same units.

Question Number	16.	Correct Option	d

Explanation

We know that

$$stress = F/A$$

$$F = stress \times A$$

Area for two wires

$$A1 = \pi r^2 = 9.1 \times 10^{-6}m^2$$

$$A2 = 1.8 \times 10^{-5}m^2$$

Solving for the stress for the first rope,

$$stress = F/A = 220/9.1 \times 10^{-6}$$

stress = 24.2MPa

As stress is same for both ropes, so force is second rope is given by

$$F = 24.2\times10^{6} \times 1.8 \times 10^{-5}$$

F = 438N

Question Number	17.	Correct Option	c

Explanation

Use

$$V_f = V_i + at$$

and initial velocity=0

Question Number	18.	Correct Option	d

Explanation

Sound require medium to travel so speed of sound in vacuum is zero.

Question Number	19.	Correct Option	b

Explanation

Fractional uncertainty is given by

$\Delta M/M$

Question Number	20.	Correct Option	b

Explanation

Fractional uncertainty is calculated by dividing the uncertainty found in reading by the measured value.

So in the above case the uncertainty found in the reading is 0.1 amd the measured value is 10 therefore the fractional uncertainty becomes

= 0.1/10=0.01

note that it is the ratio of same quantities hence it has no units.

Question Number	21.	Correct Option	b

Explanation

In parallel circuit

$$1/R_{eq} = 1/R_1 + 1/R_2$$

$$R_{eq} = R_1R_2/R_1 + R_2$$

$$R_{eq} = 10/7$$

Question Number	22.	Correct Option	d

Explanation

The point D indicates ultimate tensile stress which is the point where a material can bear the maximum stress before breaking.

Point A indicates proportional limit. Upto point A Hooke's Law is obeyed in which force and extension observe a linear relation

Point B and C indicate Yield point or Yield stress. This point indcates the limit of the elastic behaviour of the material. In elastic behaviour the object returns to its original shape when a stress is removed

Point E indicates the breaking stress which shows that beyond this point the object is broken.

Question Number	23.	Correct Option	d

Explanation

When a vehicle is moving towards a passenger then the frequency of horn received by passenger will be greater than the actual horn sound frequency.

Question Number	24.	Correct Option	a

Explanation

We know that

$$T = \frac{2}{3k} < \frac{1}{2}mv^2 >$$

As 2/3k is constant,

So K.E is directly proportional to temperature.

Question Number	25.	Correct Option	c

Explanation

From the relation

$$T = \frac{2}{3k} < \frac{1}{2}mv^2 >$$

We can conclude that

K.E = 3kT/2

Question Number	26.	Correct Option	a

Explanation

Conventional current is often represented by the direction of the flow of positive charges which is opposite to the movement of electrons.

Question Number	27.	Correct Option	a

Explanation

The region between two consecutive minima will be bright due to constructive interference.

Question Number	28.	Correct Option	b

Explanation

Distance between crest and trough = wavelength = 5cm

Frequency is the number of waves passing through a point in one second i.e.

Frequency = (24/7)/2 = 12/7 Hz

$$v = \text{frequency} \times \text{wavelength}$$

$$v = 12/7 \times (5\times10^{-2})$$

v = 3/35 m/s

Question Number	29.	Correct Option	d

Explanation

Change in length = $\Delta L = L - l = 25.05 - 25.0 = 0.05m$

Formula for Young's Modulus is given as

$$Y = Fl/A\Delta L$$

Where $F = 15(9.8) = 147N$, $A = 2.54\times10^{-4}m^2$

Putting all values in the given relation, we get

$Y = 289MPa$

Question Number	30.	Correct Option	c

Explanation

Particle will go straight only if electric force is equal to magnetic force

$$eE=Bev$$

$$v=E/B$$

$$v = 2000m/s$$

All the particles having velocity 2000 m/s will go straight or undeviated.

Question Number	31.	Correct Option	c

Explanation

Velocity of electron in any orbit is given as

$$v = \frac{2\pi Ke^2}{nh}$$

Where $k = 9 \times 10^9\ Nm^2/C^2$, n is orbit number , h is Plank,s constant and e is charge on electron.

Putting all values in above equation to get

$v = 1.1 \times 10^6\ m/s$

Question Number	32.	Correct Option	d

Explanation

Consider the formula

$$(N/2^n)x100$$

Where N is amount of substance initially present and n is number of half-life periods elapsed.

Question Number	33.	Correct Option	c

Explanation

If both inputs are 1 then inputs to both AND gates will be 0 and 1. Thus output of both AND will be 0. When these outputs become the inputs to NOR gate, final output X is 1.

Question Number	34.	Correct Option	d

Explanation

Energy is the quantitative measure of entropy and determines the amount of energy which is not available for useful purpose.

Question Number	35.	Correct Option	c

Explanation

Avogadro's law is written as:

$V \propto n$

Hence, it gives relation between volume and number of moles.

Question Number	36.	Correct Option	a

Explanation

Equation of continuity is based on law of conservation of mass.

Question Number	37.	Correct Option	a

Explanation

CAT scanner measures the amount of X-rays absorbed. As infected part of body absorbed more radiation and thus detected easily.

Question Number	38.	Correct Option	b

Explanation

When heat is removed from the gas its entropy decreases, so the change in entropy is negative.

Question Number	39.	Correct Option	b

Explanation

Boltzmann constant:

$k = R/N_A$

Question Number	40.	Correct Option	d

Explanation

We know that

$$E = hf$$

where $f = c/\lambda$, putting in above

$E = hc/\lambda$

Question Number	41.	Correct Option	b

Explanation

A Venturi meter is used to measure the speed of the liquid flow.

Question Number	42.	Correct Option	a

Explanation

We know that

$$\Delta E = hc/\lambda$$

Or

$$\Delta E = hf$$

where $\Delta E = (-3\times10^{-20})-(-1\times10^{-19})$

Putting all values above, we have

$f = 70.2Hz$

Question Number	43.	Correct Option	a

Explanation

If the temperature of a gas is increased, its viscosity unlike the liquids increases. It is due to increase in molecular velocity of gas.

Question Number	44.	Correct Option	c

Explanation

Use of heavier anode in X-rays production results in small wavelength of X-rays.

Question Number	45.	Correct Option	b

Explanation

Terminal velocity is given as

$$v_t = 2gr^2\rho/2\eta$$

where η/ρ = kinematic viscosity = $2.5\times10^{-8}m^2/s$

Putting all values in above relation we get

$v_t = 1.96m/s$

Question Number	46.	Correct Option	b

Explanation

Radical halogenation has three distinct steps:

Initiation: Cleavage of bond forms two radicals by homolysis of sigma bond.

Propagation: A radical reacts with other reactant to form a new sigma bond and the other forms another radical.

Termination: To terminate the chain, there must be two radicals combine to form a stable bond. Not one.

Question Number	47.	Correct Option	d

Explanation

Single-bonded functional groups are attached as substituents by single bonds. Alcohol has hydroxyl group which is a single bond. Amines has amine group which is a single bond. Ethers have oxygen atom connected to two alkyl groups by a single bond. On the other hand, esters have carbonyl group (C=O) and –O-alkyl group.

Question Number	48.	Correct Option	a

Explanation

Transition metal is incompletely filled until ligands will attach to it. When ligands are linked to the metal, it fills the empty orbital and that explains why complex ions change its colors. No transition metal is colorless. That is because ligands have the relative abilities to split d-orbital energy in order to change the color.

Question Number	49.	Correct Option	a

Explanation

Strategy: To get the number ozone molecules of the given data, use the ideal gas law. Then, use stoichiometry to get the ozone molecules using the Avogadro's constant.

$n = \frac{PV}{RT} = \frac{(0.5\ atm)(10L)}{(0.08206\ \frac{L \cdot atm}{mol \cdot K})(273K)} = 0.223$ mol of Ozone

0.223 mol of Ozone$\left(\frac{6.022\times10^{23}\ molecules\ of\ Ozone}{1\ mol\ of\ Ozone}\right) = 1.32 \times 10^{23}$Ozone Molecules

1×10^{18}CFC molecules$\left(\frac{100000\ Ozone\ molecules\ destroyed}{1\ CFC\ molecules}\right) = 1 \times 10$ molecules destroyed

Ozone molecules left = 1.32×10^{23}Ozone molecules - 1×10^{23} Ozone molecules destroyed

Ozone molecules left = 3.2×10^{22}

Question Number	50.	Correct Option	b

Explanation

$NaBH_4$ is not strong enough to reduce esters and carboxylic acids into alcohols. It needs a stronger reducing agent such as $LiAlH_4$ for the reaction to occur.

Question Number	51.	Correct Option	a

Explanation

Reaction : $2ONCl\ (g) \rightarrow 2NO\ (g) + Cl_2\ (g)$

Initial : $\frac{1mol}{2L} = 0.5M$ 0 0

Change : 0.5 (1-0.07) 0.5(0.07) $\frac{1}{2}(0.5)(0.07)$

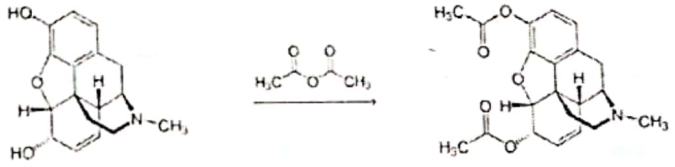
Equilibrium: 0.465 0,35 0.175

$k_c = \frac{[NO]^2[Cl_2]}{[ONCl]^2} = \frac{(0.35)^2(0.175)}{(0.465)^2} = 0.099$

Question Number	52.	Correct Option	b

Explanation

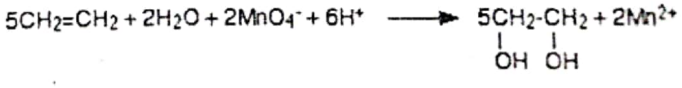
Acetylation occurs when there is a transfer of an acetyl group (CH3CO-) from one heteratom to another. Heroin is an opioid prepared from reacting an acid anhydride with morphine. It undergoes acetylation in which the acetyl group of the anhydride replaces the hydroxyl group of morphine to form a heroin.



Question Number	53.	Correct Option	d

Explanation

When an alkene is reacted with water under acidic conditions in the presences of potassium permanganate, the manganate (VII) will be reduced to manganese (II) ions.



Question Number	54.	Correct Option	a

Explanation

The greatest repulsion occurs between LP-LP because the electrons are more far away from the nucleus as a result the attractive forces of the nucleus on these electeron pairs is less. The electrons of the bonded pair are closer to the nucleus creating a greater attractive force than repulsion.

Question Number	55.	Correct Option	c

Explanation

Some solar radiation is reflected by Earth and the atmosphere. Some radiation is absorbed by Earth's surface and warms it. Some long-wavelength radiation is absorbed by the greenhouse gases. Reflected radiation of the sun from the surface of the Earth is a long-wavelength radiation called infrared rays. This process is called the greenhouse effect.

Question Number	56.	Correct Option	a

Explanation

Halogen is arranged in terms of high toxicity, reactivity, and oxidizing ability from fluorine to iodine in decreasing order. Therefore, the answer is I<Br<Cl<F.

Question Number	57.	Correct Option	b

Explanation

Lightning supplies energy for N_2 and O_2 to react in order to form NO. When NO reacts with O_2 in the atmosphere, it forms NO_2. Nitrogen dioxide can react with rainwater to form nitric acid. When rain with nitric acid pours down, nitric acid is ionized in the soil to nitrates which can be readily absorbed by plants or fungi such as mushrooms to thrive.

Question Number	58.	Correct Option	c

Explanation

Strategy: Use ideal gas equation to calculate the mass. All are in English units so the resulting mass should be in English. Make sure the gas constant is in English unit.

$R = 0.08206 \frac{L.atm}{mol.K}$

$T = 26.67\ ^oC + 273 = 299.67\ K$

$P = 5.103\ atm$

$V = 386.436\ L$

Mass of air $= 28.8 \frac{g}{mol}$

$PV = nRT$

$n = \frac{PV}{RT} = \frac{5.103\ atm(386.436\ L)}{(0.08206 \frac{L.atm}{mol.K})(299.67K)}$

$80.19\ mol(\frac{28.8\ g}{1\ mol}) = 2309.52\ g$

Question Number	59.	Correct Option	a

Explanation

The BF_2 and CCl_4 show a symmetry in their molecule in which each of their dipole moments counteract each other making them non polar. Hence, the polar molecule in the choices are H_2S and NH_3.

Question Number	60.	Correct Option	a

Explanation

Molecular weight of SO_2: 1(32) + 2(16)= 64g/mol

1×10^6 molecules of $SO_2(\frac{1\ mol\ of\ SO_2}{6.022 \times 10^{23} molecules\ of\ SO_2})(\frac{64g\ of\ SO_2}{1\ mol\ of\ SO_2}) = 1.06 \times 10^{-16}$ g of SO_2

Question Number	61.	Correct Option	b

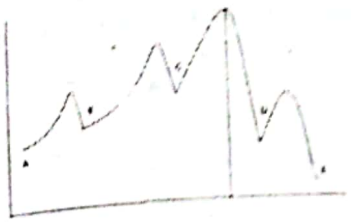
Explanation

Ethanol is the only alcohol that can produce triiodomethane in iodoform test.

Question Number	62.	Correct Option	b

Explanation

The rate-determining is the slowest step of the series of elementary reactions. It is described to have the highest activation energy. The higher the activation energy, the slower the reaction. In the figure, the highest activation is C-D. Therefore, it is the rate-determining step.



Question Number	63.	Correct Option	a

Explanation

Capsaicin ($C_{18}H_{27}NO_3$)

Total number of valence electrons in octet : 8(18) + 2(27) + 8 (1) + 8(3) = 230e

Question Number	64.	Correct Option	c

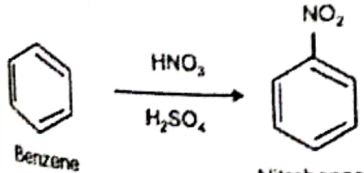
Explanation

$2Mg + O_2 \rightarrow 2MgO$

Question Number	65.	Correct Option	c

Explanation

Benzene in the presence of sulfuric acid will react with nitric acid to form nitrobenzene and water



Question Number	66.	Correct Option	a

Explanation

The ionization energy decreases down the noble gas group because the size increases. Therefore, the answer is Rn<Xe<Kr<Ar<Ne<He.

Question Number	67.	Correct Option	c

Explanation

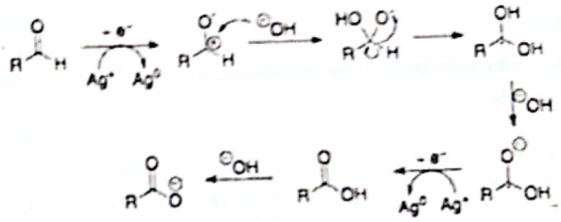
Aromatic compounds such as benzene mostly undergoes electrophilic substitution reaction especially when it is reacted with alkyl halides.

The pi bonds in benzene are delocalized making the compound very stable. If the double bond is broken it causes the compound to be unstable hence it does not undergo addition reactions.

Question Number	68.	Correct Option	b

Explanation

Carboxylic acid can be prepared from aldehyde via Tollen's reagent. Take note that Tollen's reagent only reacts with aldehydes to form a silver mirror. The first step is the silver from Tollen's reagent will break the pi bond and undergo a reduction. OH- will then attack the electron deficient carbon. The steps repeat until it forms a carboxylate ion. The second step is the protonation of carboxylate ion to form a carboxylic acid.



Question Number	69.	Correct Option	b

Explanation

Sulfuric acid and nitric acid are anthropogenic pollutants. They are both strong acids and ionized to hydronium ion with water.

Question Number	70.	Correct Option	d

Explanation

Carbon tetrachloride has detrimental effects on liver and kidneys when inhaled or ingested but it is still widely used as fire extinguishers, precursors of refrigerants, and cleaning agents.

Question Number	71.	Correct Option	a

Explanation

$Fe^{3+}(aq) + e^- \rightarrow Fe^{2+}(aq)$ E^0= +0.771V

$Pb^{2+} + 2e^- \rightarrow Pb(s)$ E^0= -0.126V

The more negative reduction potential, the more likely to occur in the anode. Oxidation occurs at the anode. Therefore the Oxidation half-reaction $Pb^{2+} + 2e^- \rightarrow Pb(s)$

Question Number	72.	Correct Option	c

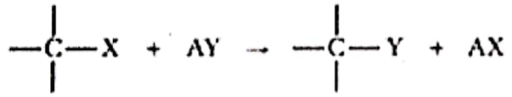
Explanation

One indication to know the trend of boiling point is also in the intermolecular force. We all know that hydrogen bonding is stronger than dipole-dipole and Van der Waal forces. CH_3NH_2 exhibits hydrogen bonding. Therefore, it has the highest boiling point.

Question Number	73.	Correct Option	d

Explanation

It represents substitution reaction replacing X with Y from AY to produce AX.



Question Number	74.	Correct Option	c

Explanation

Strategy: Use Dalton's Law of Partial pressure to calculate the mass fraction. Then, Use Raoult's law to calculate the mole fraction.

P_T = 50 kPa ; P_A = 100kPa ; P_B = 15kPa

Daltone's Law : $P = P^o_A X_A + P^o_B X_B$; $X_A + X_B = 1$

50 kPa = 100 kPa (X_A) + 15 kPa (1 - X_A)

X_A= 0.4118

X_B= 1 - 0.4118 = 0.5882

Raoult's Law $P_T Y_A = P^o_A X_A$; $Y_A + Y_B = 1$

$Y_A = \frac{P^0_A X_A}{P_T} = \frac{100\ kPa(0.4118)}{50\ kPa} = 0.8236$

Y_B= 1 - 0.8236 = 0.1764

Question Number	75.	Correct Option	c

Explanation

SN_2reactions are bimolecular nucleophilic substitution reactions. In these reactions nucleophile replaces a leaving group. As shown in the reaction below

Imageresultforsn2reactionssteps

S_{N2} reaction exhibits a second order kinetics where bimolecular transition state is generated and both alky halide and nucleophile appear in the rate equation as the rate of these reactions depend on the concentration of both of its reactants

Question Number	76.	Correct Option	b

Explanation

Antioxidants are reducing agents that help donate electrons to the molecules that have been oxidized treating the damage caused by free radicals.

Question Number	77.	Correct Option	d

Explanation

Transition metals have magnetic properties, distinctive coloring, and incompletely filled d-orbital shell. Therefore, there answer is all of the above.

Question Number	78.	Correct Option	d

Explanation

$Br_2(l) \left| \begin{matrix} Br^- \\ 1M \end{matrix} \right| \left| \begin{matrix} H^- \\ 1M \end{matrix} \right| H_2(g)$

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

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

H has the least value of reduction potential. Therefore, it must occur in the anode.

Anode: $H_2 \rightarrow 2H^+(aq) + 2e^-$

Cathode: $Br_2(l) + 2e^- \rightarrow 2Br^-$

Overall: $H_2 + Br_2(l) \rightarrow 2Br^- + 2H^+(aq) \rightarrow 2HBr(aq)$

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

$E^0_{cell} = 01.07 - (0V)$

$E^0_{cell} = +1.07V$ The reaction favors the forward reaction

Question Number	79.	Correct Option	b

Explanation

Nitrogen gas (N_2) has three bonds. To prove it, we can use the Co-ordinate Covalent version:

Total number of valence eletrons : $\frac{5^-}{1\ N\ atom}$ x 2 N atom = $10e^-$

Total number of valence eletrons in actet : $\frac{8^-}{1\ N\ atom}$ x 2 N atom = $16e^-$

Total of share electrones : $16e^- - 10e^- = 6e^-$

Total number of covalent bonds = $6e^- \frac{1\ bond}{2e}$ = 3 covalent bonds

Therefore , there are 2 pi bonds and 1 sigma bond in the nitrogen gas malecule.

Question Number	80.	Correct Option	b

Explanation

The more negative E means it is likely to occur in the anode

Anode: $Y \rightarrow Y^{n+} + ne$

Cathode: $X^{n+} + ne \rightarrow X$

Overall: $X^{n+} + Y \rightarrow Y^{n+} + X$

Question Number	81.	Correct Option	c

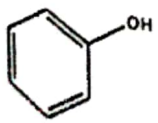
Explanation

In 1951, Roy J. Plunkett, an American DuPont chemist, was awarded the Scott Medal for his accidental invention. During this time, each guest received a tin coated muffin with a synthetic fluoropolymer called polytetrafluoroethylene (PTFE) or its DuPont's brand name, Teflon.

Question Number	82.	Correct Option	d

Explanation

Phenol is a member of aromatic hydrocarbon because it contains a benzene ring.



Question Number	83.	Correct Option	a

Explanation

A halogen atom can only gain 1 electron from alkali earth metals. Alkali earth metals needs two halogen atom to attain octet.

Question Number	84.	Correct Option	b

Explanation

Cancel the catalyst and the intermediates:

$O_3 \rightarrow O_2 + O$ (1)

$NO + O_3 \rightarrow NO_2 + O_2$ (2)

$NO_2 + O \rightarrow NO + O_2$ (3)

$2O_3 \rightarrow 3O_2$

Question Number	85.	Correct Option	a

Explanation

The mechanism of Catalysis:

i. A + catalyst → A(catalyst)

ii. A(catalyst) + B → AB + catalyst

A + B → AB

A system with catalyst has faster reaction time than the uncatalyzed system. Reactant A and catalyst interacts to form a reaction inermediate called A(catalyst). A(catalyst) generated on step 1 and it is consumed on step 2. The catalyst is not consumed but regenerated after the reaction to catalyze another reactant.

Question Number	86.	Correct Option	d

Explanation

Linear aliphatic hydrocarbons are straight or branched chains. A single-bonded hydrocarbon is saturated and a double-bonded or triple-bonded hydrocarbon is unsaturated. On the other hand, antiaromatic is not a quality of linear aliphatic hydrocarbon because it is cyclic and planar but different with aromatic hydrocarbon.

Question Number	87.	Correct Option	a

Explanation

$H_2CO_3 \rightarrow CO_2 + H_2O$

$R_{rxn} = -RH_2CO_3 = RCO_2 = RH_2O$

$-RH_2CO_3 = -\frac{\Delta C}{\Delta T} = -\frac{0.40-0.80}{3-0} = +\frac{2}{15}$

$-RH_2CO_3 = +\frac{2}{15}$

$-RH_2CO_3 = RCO_2$

$RCO_2 = +\frac{2}{15}$

Question Number	88.	Correct Option	a

Explanation

The oxidation of aldehydes will definitely lose a hydrogen atom and forms a hydroxyl group to form carboxylic acid. Therefore, oxidation decreases the number of C–H bond.

Question Number	89.	Correct Option	a

Explanation

The electronegativity trend across a period is increasing from left to right. Fluorine is the most electronegative element and when it bonds to H will have shorter bond compared to others. Carbon, on the other hand, is the least electronegative element among the choices and when it bonds to H will have the longest bond. Therefore, the answer is C-H.

Question Number	90.	Correct Option	a

Explanation

Water vapor has the most direct contribution of greenhouse effect among all greenhouse gases.

Question Number	91.	Correct Option	c

Explanation

eutrophication leads to over production of algae on the surface of water due to high concentration of nutrients. the sunlight is blocked and submerged plants are affected.

Question Number	92.	Correct Option	a

Explanation

Explanation: fact. This theory explains the opening and closing of stomata depending on the level of sugar.

Question Number	93.	Correct Option	b

Explanation

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

Question Number	94.	Correct Option	c

Explanation

Schistosoma belong to phylum Platyhelminthes and they cause infection in humans commonly known as snail fever. Infection occurs when your skin comes in contact with contaminated freshwater in which certain types of snails that carryschistosomesare living.

Question Number	95.	Correct Option	b

Explanation

Explanation: respiratory tract has 2 portions,

1. Conducting portion that conduct air to lungs and filter, warm, and moisten it along the way. This portion consists of nose, pharynx, larynx, trachea, bronchi, bronchioles and terminal bronchioles
2. Respiratory portion where exchange of gases takes place. Respiratory bronchioles and alveolar ducts exchange 10% of the gases. 90% of the gases are exchanged by alveoli

Question Number	96.	Correct Option	c

Explanation

Fact

When undigested food reaches large intestine, it mainly consists of water, salts, and undigested material. Water and salts are absorbed into the blood stream here.

Question Number	97.	Correct Option	d

Explanation

Explanation: heart is enclosed in double membrane sac

Question Number	98.	Correct Option	a

Explanation

Since tall is a dominant trait, so all the offsprings produced as the result of TT x tt will be hybrid or heterozygous tall.

Question Number	99.	Correct Option	d

Explanation

Effectors are of 2 type, muscles and glands. If effectors are glands they respond by secreting, if muscles then they response by contracting.

Question Number	100.	Correct Option	b

Explanation

fact. carbon dioxide is produces as the result of burning of fossil fuel. this causes global warming due to greenhouse effect.

Question Number	101.	Correct Option	a

Explanation

Stomata closes when potassium ions diffuse out of the guard cells. Water also moves out and guard cells become flaccid.

Question Number	102.	Correct Option	a

Explanation

Dorsal route ganglion contains cell bodies of sensory neurons.

Question Number	103.	Correct Option	d

Explanation

Pioneers community is the first biotic community which develops in bare area. Lichens and algae are believed to lay the basis of pioneers community.

Question Number	104.	Correct Option	d

Explanation

during first stage of menstrual cycle, the follicles break down by degenerative process known as follicle atresia. Only one follicle continues to grow.

Question Number	105.	Correct Option	a

Explanation

Test cross is used to check the genotype of the organism. For this purpose, it is crossed with the homozygous recessive trait organism. The individual which shows recessive trait is always homozygous.

Question Number	106.	Correct Option	a

Explanation

bacteria have peptidoglycan call wall. fungi have chitin cell wall. Salmonella type is bacterium whereas, penicillium is fungus. adiantum is fern. plant cell wall is composed of cellulose.

Question Number	107.	Correct Option	d

Explanation

fact

testosterone is essential for sperm production.

It also controls development of male secondary sex characters.

Question Number	108.	Correct Option	a

Explanation

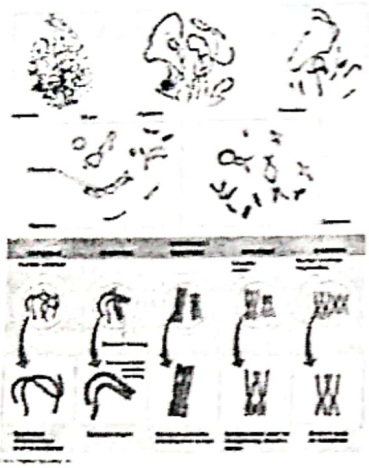
Prophase I comprised of five stages;

1) Leptotene: chromosomes begin to condense.

2) Zygotene: chromosomes become closely paired.

3) Pachytene: crossing over occurs.

4) Diplotene: homologous chromosomes begin to separate but remain attached by the chiasmata.

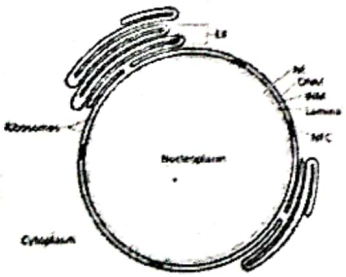


5) Diakinesis: chromosomes condense and separate until terminal chiasmata only connect the two chromosomes.

Question Number	109.	Correct Option	b

Explanation

Fact.



Question Number	110.	Correct Option	c

Explanation

Darwin believed in extinction of the organisms that could not adapt according to the environment.

Question Number	111.	Correct Option	b

Explanation

Explanation: compact bones are not provided with the blood cells. Spongy bones have cavities where bone marrow is present that produces blood cells.

Question Number	112.	Correct Option	d

Explanation

Saliva is produced by

I. Parotid gland : through ducts to posterior portions of oral cavity
II. Submandibular gland : in floor of oral cavity
III. Sublingual gland : in floor of oral cavity

Question Number	113.	Correct Option	a

Explanation

Explanation: Electrical impulses from theheartmuscle cause theheartto contract. This electrical signal begins in the sinoatrial (SA)node, located at the top of right atrium. The SAnodeis sometimes called theheart's naturalpacemaker.

Question Number	114.	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	115.	Correct Option	a

Explanation

leeches do not have head but they have chitinous jaws that are used for the purpose of puncturing the skin of the host. they secret anticoagulant that is passed into the wound and allows smooth flow of blood into the digestive system of the leech.

Question Number	116.	Correct Option	b

Explanation

IN HIV Viruses, reverse transcriptase converts single stranded RNA into double stranded viral DNA through reverse transcription.

Question Number	117.	Correct Option	d

Explanation

Disease	causing agent
Hepatitis A	Non enveloped RNA virus
Hepatitis B	DNA virus
Hepatitis C	Enveloped RNA virus
Polio	RNA virus
Herpes simplex	DNA virus
Mumps and measles	paramyxoviruses

Question Number	118.	Correct Option	b

Explanation

fact

carbondioxide is responsible for usually more than half of the greenhouse effect. other contributors are CFCs and methane. nitric oxide also contributes.

Question Number	119.	Correct Option	a

Explanation

Sodium is high in extra cellular matrix either active membrane potential or resting membrane potential.

Question Number	120.	Correct Option	a

Explanation

Explanation: deoxygenated blood enters right atrium through superior vena cava from head and arms region.

deoxygenated blood enters right atrium through inferior vena cava from lower limbs and organs to the heart

Question Number	121.	Correct Option	b

Explanation

Stomata open when potassium ions are actively transported in the guard cells. Water also enters from surrounding cells through osmosis.

Lowering of solutes in guard cells does not contribute to the opening of stomata.

Question Number	122.	Correct Option	d

Explanation

Gastrin is secreted by G' cells in the lining of the*stomach*and*upper*small intestine

Pepsinogen is secreted by both mucouscellsandchief cells

Hydrochloric acid is secreted by parietal cells.

Question Number	123.	Correct Option	b

Explanation

Xerophytes are plants which grow in regions where there is little liquid water. They have adaptations to survive in this region. They have adapted to reduce the rate of transpiration to conserve water.

Question Number	124.	Correct Option	d

Explanation

Gross primary production is the rate at which an ecosystems producers covert solar energy into chemical energy (in the form of biomass). If the energy lost due to respiration is subtracted from gross primary production, net primary production is obtained which is called the biomass of plant.

Question Number	125.	Correct Option	d

Explanation

Since plasmid is the part of DNA, so it has ability to replicate independently.

Question Number	126.	Correct Option	c

Explanation

snail belongs to phylum mollusca. phylum arthropoda includes all the insects with joint feet.

Question Number	127.	Correct Option	a

Explanation

during producing transgenic animal, vortex mixing procedure is applied. in this procedure eggs are placed in agitator with foreign DNA and silicon carbide needles. needles make tiny holes through which DNA can enter the cells. the eggs fertilise with foreign DNA and transgenic animal is produced.

Question Number	128.	Correct Option	d

Explanation

neuroglial cells play vital role in:

i. Nutrition of neurons

ii. Protection by myelin sheath

They make up as much as half of the nervous system.

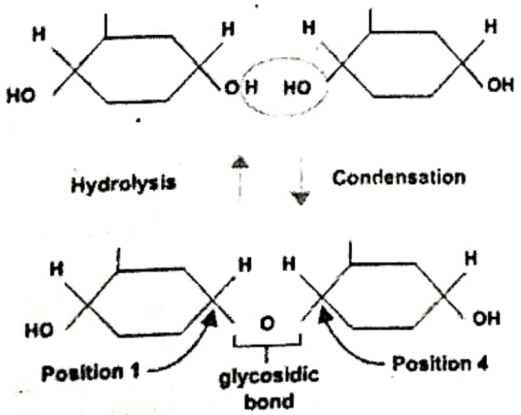
Question Number	129.	Correct Option	b

Explanation

Natural selection is the differential survival and reproduction of individuals due to differences in phenotype. It is a key mechanism of evolution, the change in the heritable traits characteristic of a population over generations.

Question Number	130.	Correct Option	a

Explanation



A glycosidic bond is a type of covalent bond that joins a carbohydrate molecule to another group, which may or may not be another carbohydrate.

Question Number	131.	Correct Option	a

Explanation

cystic fibrosis is a disease in which patient lacks lacks a gene for the trans membrane carrier of the chloride ion. this leads to certain respiratory tract infections that can lead to death.

Question Number	132.	Correct Option	c

Explanation

The amount of carbon dioxide carried by carboxyhemoglobin is 20%, 5% is carried by body fluids and 70% is carried by bicarbonate ions combined with sodium.

Question Number	133.	Correct Option	c

Explanation

Explanation: fact

All of these are lymphoid masses

Question Number	134.	Correct Option	c

Explanation

Liver fluke lives in bile duct of mammals.

Tape worm lives in intestine of human.

Dugesia is free living carnivorous flatworm.

Schistosoma resides in the blood of host organism.

Question Number	135.	Correct Option	d

Explanation

by definition. genetic code consists of 3 nitrogenous bases that codes for a protein. it is present on mRNA and is not overlapping.

The code defines how sequences of nucleotide triplets, called codons, specify which amino acid will be added next during protein synthesis.

Question Number	136.	Correct Option	d

Explanation

Explanation: fact

Wall of heart is composed of 3 layers i.e. epicardium, myocardium, and endocardium

Question Number	137.	Correct Option	c

Explanation

simple diffusion involves movement of molecules across the cell membrane without expenditure of energy.

active transport involves movement of molecules across the cell membrane with expenditure of energy against concentration gradient.

facilitated diffusion uses carrier proteins to move molecules across the membrane. here proteins show conformational changes.

Question Number	138.	Correct Option	c

Explanation

there are 6 antigens in Rh blood group (C, D, E, c, d, e) inherited through3 genealleles, located on2 geneloci.

Question Number	139.	Correct Option	c

Explanation

Explanation: Oxyhemoglobin releases up oxygen at tissue level.

Question Number	140.	Correct Option	a

Explanation

Hardy-Weinberg equilibrium law emphasizes that mating in the population must be random. Natural selection and nonrandom mating disrupt the Hardy-Weinberg equilibrium because both of them may result in changes in gene frequencies.

Question Number	141.	Correct Option	a

Explanation

release of ovum from follicle is called ovulation only one ovum is released at one time.

Question Number	142.	Correct Option	a

Explanation

evolutionary changes proceed through genetic variations.

Mutations are changes in the DNA. A single mutation can have a large effect, but in many cases, evolutionary change is based on the accumulation of many mutations. it is the ultimate source of all changes.

Gene flow is any movement of genes from one population to another and is an important source of genetic variation.

Question Number	143.	Correct Option	b

Explanation

Explanation: systole: contraction phase of heart cycle

diastole: relaxation phase of heart cycle

Question Number	144.	Correct Option	a

Explanation

Hemodialysis is done using dialyzer known as artificial kidney. The blood passes through dialyzer and is filtered through membranes present in it.

Question Number	145.	Correct Option	a

Explanation

Acylglycerols are formed by the condensation of glycerols with fatty acids. The product formed is ester, same as we already know that alcohol (glycerol) and organic acid (fatty acid) condense give ester.

Question Number	146.	Correct Option	a

Explanation

Saliva is composed of

i. Water
ii. Mucus
iii. Amylase enzyme which digests starch
iv. Sodium bicarbonate

Saliva is slightly basic and it digests starch.

Question Number	147.	Correct Option	a

Explanation

More protein in food results in stimulation of gastric glands to produce more gastrin. The stomach lining sends stimulus to gastric gland. Thus more protein, more gastrin. Stomach is the main site of protein digestion.

Question Number	148.	Correct Option	c

Question Number	149.	Correct Option	d

Explanation

Midbrain	
	Controls reflex movements of the neck, head and trunk in response to visual and auditory stimuli. Also controls the reflex movements of the eye muscles, changes in pupil size and shape of the eye lens.
Hindbrain	
Pons	Regulates respiration. Relays information between the cerebellum and the cerebrum.
Cerebellum	Maintains posture and balance of the body. Enables us to make precise and accurate movements.
Medulla	Controls involuntary actions such as breathing, etc. Controlling centre for reflexes such as swallowing, coughing, vomiting, etc.

Question Number	150.	Correct Option	d

Explanation

Autophagosomes are double-membraned organelle and it is the key structure in intracellular degradation system for cytoplasmic contents.

Question Number	151.	Correct Option	c

Explanation

Sieve plates increase the resistance along the pathway. This results in generation of substantial pressure gradient in sieve elements between sink and source.

Question Number	152.	Correct Option	d

Explanation

vibrio is curved or comma shaped rod

spirillum is thick, rigid spiral

spirochete is thin, flexible spiral

Question Number	153.	Correct Option	d

Explanation

SCID occurs due to deficiency of adenine deaminase , an enzyme involved in maturation of T and B cells. these cells are important part of immune system.

Question Number	154.	Correct Option	a

Explanation

fact

these enzymes are released by nitrogen fixing bacteria and they convert nitrogen to nitrate ions and ammonia.

Question Number	155.	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	156.	Correct Option	c

Explanation

Aerobic: need oxygen. eg, pseudomonas

Anaerobic: do not survive in presence of oxygen. e.g., spirochete

Facultative anaerobes: survive in both conditions. e.g., e. coli

Microaerophilic: require small amount of oxygen. e.g., campylobacter

Question Number	157.	Correct Option	a

Explanation

nitrogen fixing bacteria are responsible for fixing nitrogen in the soil

Question Number	158.	Correct Option	b

Explanation

Explanation: homeo – constant, stasis – state

In biology, homeostasis is the maintenance of constant internal environment of the body despite the changes in external environment.

· Internal environment includes all the internal organs of the body.

If we look closer, all the body internal body parts are provided by the body fluids i.e. blood and tissue fluids.

· Precisely, internal environment means body fluids which include blood and tissue fluids.

Question Number	159.	Correct Option	b

Explanation

ACTH produced by fetal pituitary gland stimulates fetal adrenal gland to produce corticosteroids which crossed placental barrier to enter mother's blood. This causes decrease in the production of progesterone by mother.

This reduction in progesterone leads to production of oxytocin which causes labour pains and contraction of uterus wall. The mother, in this way, gets ready to deliver the baby.

Question Number	160.	Correct Option	b

Explanation

Lamarck's theory of evolution explains the statement.

Question Number	161.	Correct Option	c

Explanation

Grammar rules for You and I / You and Me.

1) Subjective and Objective pronoun:

I, she, he, they, we are subject pronouns. Subjective pronouns in a sentence are the doers, they perform an action in a 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, them are object pronoun. Object pronouns tends to be receiver in a sentencd. Therefore, if two people are receiving an action then use *You and Me.*

For example:

- My parents will buy you and me cinema ticket.

2) Preposition Rule:

Preposition helps us to identify whih pronoun shall we use in a sentence. Prepositions such as *at, by, between* are followed by an object pronoun.

For example:

-The secret should remain between you and me.

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

For example;

-I wrote a mail to myself. (I is the subject and myself is the object).

- Us is a collective noun

Hence, I is the right choice.

Question Number	162.	Correct Option	c

Explanation

- Diffident means to lack confidence in one's own abilities.

Sample sentence: *He felt diffident about speaking in public as it was his first public speech.*

-Courageous relates to bravery.

Sample sentence: *He spoke courageously about the injustice inflicted upon him.*

-Confident is to have full assurance.

Sample sentence: *He spoke confidently as he was well prepared for it.*

-Lazy means lethargic.

Sample sentence: *He is so lazy that he can not even pick a glass of water for himself.*

Hence, *restrained* is most close in meaning to diffident.

Restrained is to lack boldness or confidence.

Sample sentence: *Farhan felt restrained talking to his boss while asking for holidays.*

Question Number	163.	Correct Option	b

Explanation

Sagacity means-soundness of judgement.

Sample sentence: *He showed his sagacity bydevising a prompt solution to the problem.*

-Stalwart refers to determination, firmness

Sample sentence: *She has been a stalwart supporter of human rights.*

-Ignorant is someone who lacks knowledge or information.

Sample sentence: *Ignorant people become an easy prey to extremist ideas.*

-Intelligence is the ability to comprehend, learn, reason and make rational choices.

Sample sentence: *Everyone admired his intelligence when he solved the complex mathematics problem sum.*

-Skeptic is to have a doubtful attitude towards the authenticity of something appearing to be factual.

Sample sentence: *An auditor is suppose to have an skeptic approach while auditing.*

Therefore, option B is most appropriate.

Question Number	164.	Correct Option	d

Explanation

- Gesticulating means to give gestures.

Sample sentence: *She gesticulated in a way that she was able to attract the audience.*

-Laughing means to show feeling of happiness.

Sample sentence: *She laughed so hard on joke.*

-Dancing is to take a series of rhythmical steps.

Sample sentence: *Wewere all dancing out of joy.*

-Performing means to perform in a role or drama.

Sample sentence: *Aliza is performing the role of a Queen.*

-Gesturing is a motion of hands or body to express something.

Sample sentence: *Her gestures were so sweet that everyone praised her.*

Hence,gesturing is the suitable answer.

Question Number	165.	Correct Option	a

Explanation

- Hypothetical means a situation or idea created on the basis of some theories or possibility that a thing exists but it does not actually.

- Theoretical means pertaining to theories rather than practical consideration.

- Unreal means something that is not real.

- Dreamy means lacking spirit of liveliness.

- Fake means having a misleading appearance.

So the suitable answer to hypothetical is theoretical.

Question Number	166.	Correct Option	b

Explanation

This is a future perfect tense and we use will have/shall have with the 3rd form of verb. Shall have is used with I and we.

Have is used in present perfect tense and has is used in present perfect tense.

So will have is the correct answer.

Question Number	167.	Correct Option	d

Explanation

- Phrase above is stated infuture indefinite tense. Future indefinite tense implies anything that is yet to occur.

- In case of future indefinite tense, use *'shall'*with*I*and *we*,where as use *'will'*with*he, she, they, it, you.*

For example (using shall):

- *We shall not accept this offer.*

For example (using will):

-*You will not accept my offer.*

Hence, according to rule stated above,shall is the correct answer.

Question Number	168.	Correct Option	d

Explanation

- Out means when we have to talk about some movement which can be towards or away from something.

- Of means denoting the person by whom a thing is done.

- In means towards the inside of something.

- Off means to run away from something.

Hence, off is the suitable answer

Question Number	169.	Correct Option	a

Explanation

- Discrepancy is the difference between conflicting facts or claims.

Sample Sentence: *There is wide discrepancy between the quality of the supplies supplied by two different vendors.*

-Contrast is dissimilarity or difference between things.

Sample Sentence: *Contrast between the quality of two paints.*

-Similarity is the resemblance between things.

Sample Sentence: *Although they are twins yet there is no similarity in them.*

-Analogy is an inference about a particular thing.

Sample Sentence: *Talent show Judgedrew an analogyfrom contestant'sspeechthat he is a hard working person.*

-Scope is an area in which something operates.

Sample Sentence: *The scope of your authority is limited to this district only.*

Hence,contrast is the suitable answer.

Question Number	170.	Correct Option	c

Explanation

- Obtuse is someone who is blockheaded or insensitive.

- Abnormal is the one who is not normal and has some psychological issues.

- Insensitive is the one who is unresponsive to a stimuli.

- Weak is someone who is not healthy.

- Failure is an act of failing all the time.

Hence insensitive is the most suitable answer to obtuse.

Question Number	171.	Correct Option	b

Explanation

Mesmerize means to hypnotizeorsoothe.

- Memory is the mental capacity retention.

- Huge means very big.

- Fascinate means to attract, charm, arouse etc.

- Disgusted is an awful feeling.

Therefore, option C is most appropriate.

Question Number	172.	Correct Option	c

Explanation

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

Usage: *This gift is for you.*

- Preposition "within" is use to refer to time and space.

Usage: *I asked my daughter to stay with in the limits of this park else she will lost.*

- Preposition "of" indicates relation, belonging or connection.

Usage: *This jacket is made of wool.*

- Preposition "in" is used for unspecific time during a day, a month, a year.

Usage: *Let's meet in afternoon.*

Hence, of is the right answer.

Question Number	173.	Correct Option	b

Explanation

-Among other uses of the preposition 'On',it is used with dates or with singular days of week.

Usage: *I will meet you on Tuesday.*

-Among other uses of the preposition 'Inside',it is used to express a location or something that is physically enclosed.

Usage: *You keys are inside the wooden box.*

- Among other uses of the preposition 'To', It is used for movements, in expressing time or in phrasal verbs.

Usage: *Can you please give it to Hameed?*

- Among other uses of the preposition 'Into',It is a preposition that indicates movement or transformation towards something.

Usage: *Don't try to get into this mess.*

Hence,Inside is the suitable answer.

Question Number	174.	Correct Option	c

Explanation

- Vague means ambiguous.

-Versatile means adaptable.

-Jargon means using difficult vocabulary.

-Unclear is something which is difficult to understand.

-Lucid means clear, easily understandable.

Therefore, option C is the most appropriate.

Word	Synonym	Antonym
Vague	dubious, ambiguous	certain, clear
Versatile	adaptable, resourceful	dull, incapable
Jargon	vocabulary	standard
Lucid	intelligible,understanable	dark, foggy

Question Number	175.	Correct Option	b

Explanation

- Heinous means dangerous or hateful.

-Magnificent refers to something extraordinarily superb.

-Gruesome refers to anything causing great horror or distress.

-Unpleasantmeans not comfortable.

-Appealing means is to be pleasant to be attractive.

Therefore, gruesomeis the most appropriate synonym.

Word	Synonym	Antonym
Heinous	odious, abhorrent	friendly, mild
Magnificient	brilliant, elegant	bad, inferior
Gruesome	ghastly, grim	attractive, comforting

Question Number	176.	Correct Option	d

Explanation

Incarcerate means to keep someone in prison.

Sample sentence: *Illegal immigrants were incarcerated.*

- Embodied mean to give concrete form.

Sample sentence: *The team leader embodied the wishes of his followers.*

-Inclusive means including or involving.

Sample sentence: *My rent is Rs.10,000 inclusive of all bills.*

- Imprison means to keep in jail.

Sample sentence: *He is imprisoned for 14 years duo to the trial of a murder case.*

-Eroded means to wear gradually.

Sample sentence: *Your knowledge will erode if you stop reading.*

Therefore, option D is most appropriate.

Question Number	177.	Correct Option	a

Explanation

Brio is a quality of being active or spirited.

Sample sentence: *He assumed his new role as a manager with brio.*

-Spirited is a person who is lively or profoundly active.

Sample sentence: *Our school team went to the ground to play cricket with high-spirits.*

-Lifelessness means to not have any life.

Sample sentence: *He is such a bore personality, what a lifeless man.*

-Dead means a person who has stopped breathing.

Sample sentence: *I found my dog dead when I came back from the office.*

-Motionless means something that is not moving.

Sample sentence: *After the accident my car was motionless.*

Therefore,spirited isclosest in meaning tobrio.

Question Number	178.	Correct Option	a

Explanation

- Infatuated means to fall in love with something or someone or to start showing interest in something.

- In love means to start falling for someone.

-Uninterested means not having any interest.

-Unconcerned means to not show any type of interest or care.

- Concerned means someone who is feeling or showing worry.

So in love is the suitable substitute word forinfatuated.

Question Number	179.	Correct Option	a

Explanation

Brambles are any rough shrubs or vines.

- Rough vines are the rough woody part of plants that bear grapes or berries.

-Brimless are the ones without any cap.

-Brush is an object use to do cleaning.

So the word closest in meaning to brambles is rough vines.

Question Number	180.	Correct Option	c

Explanation

- Sentence above is in Present perfect continuous tense. Present perfect continuous tense denotes that an action started in past and it is still going on. We use "been" with verb +ing (verb in sentence is*work + ing*).

- Use of have and has depends on the noun. Has is used with pronouns like He/She/It or singular nouns. The use of has ensures the singularity of the subject.Have is used with You/We/They and plural nouns. Have is used with plural subject.

Hence, has been is the right choice.