

1. Which function cannot be attributed to plasma membrane lipids?

- A. Recognition of cells having non-self-surface markers
- B. Maintaining cell membrane flexibility
- C. Control of metabolic reaction across cell membrane
- D. Binding ligands for intracellular responses

2. Follow the route of pepsinogen secreted by zymogen cells:

- A. SER → RER → Golgi complex → Secretory vesicles
- B. SER → Mitochondria → Golgi complex → Secretory vesicles
- C. RER → SER → Golgi complex → Secretory vesicles
- D. Golgi complex → RER → SER → Secretory vesicles

3. Less reactivity of sucrose is due to its:

- A. High solubility in water
- B. Polar nature
- C. Unavailability of functional group
- D. Alpha 1-2 Glycosidic linkage

4. Sucrose is used as a transport carbohydrates instead of glucose because:

- A. It is a disaccharide
- B. It is a non reducing sugar
- C. It is soluble in water
- D. It does not change osmotic potential of water

5. Corona Virus is enveloped virus. Hand sanitizers and surface cleaners were recommended to avoid covid epidemic. Which property of corona virus made these products effective?

- A. pH Sensitivity
- B. Heat sensitivity
- C. ss RNA genome
- D. Hypotonicity

6. Proteins with tertiary structure are helpful in:

- A. Carrying messages from glands to target organs
- B. Maintaining epithelial lining of skin
- C. Making the matrix of connective tissue
- D. Helping in muscle contraction

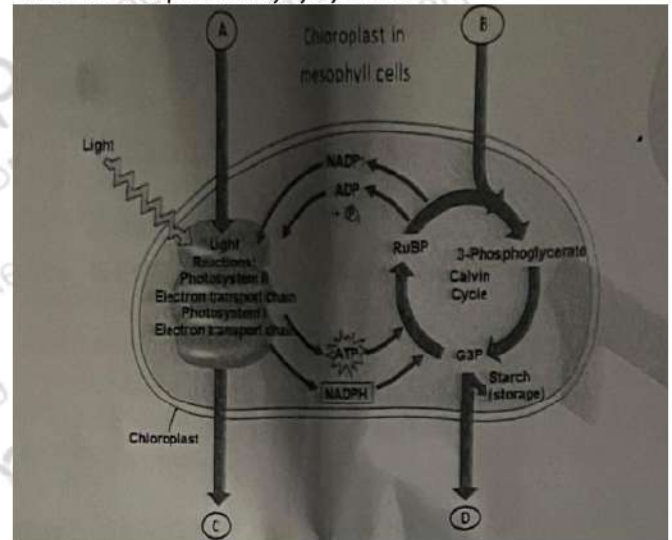
7. Rebounding is process of straightening the curly hairs, which bond is targeted by oxidizing agents used during this process?

- A. Peptide bond
- B. Ionic bond
- C. Disulphide bridge
- D. Hydrogen bond

8. Ions of heavy metal are harmful for living organisms because of their ability to:

- A. Cleave nucleic acid
- B. Interfere with fat metabolism
- C. Break glycosidic bonds
- D. Destabilize proteins

9. The diagram below represents key processes in photosynthesis. Choose the option that correctly labels the components A, B, C, and D:



Option A B C D

	A	B	C	D
A	CO ₂	O ₂	H ₂ O	Sugar
B	H ₂ O	Sugar	CO ₂	O ₂
C	H ₂ O	CO ₂	O ₂	Sugar
D	O ₂	CO ₂	H ₂ O	Sugar

Option

- A. A
- B. B
- C. C
- D. D

10. Which mechanism would be compromised in the absence of cytochrome complex during light reaction of photosynthesis?

- A. Reduction of reaction center chlorophyll
- B. Photolysis of water
- C. Oxidation of primary electron receptor
- D. Establishment of proton gradient across thylakoid membrane

11. During glycolysis, isomerization takes place in the formation of:

- A. Dihydroxyacetone phosphate and 2-phosphoglycerate
- B. G3p and fructose 6 phosphate
- C. PEP and pyruvate
- D. Fructose 6 phosphate and 3 phosphoglycerate

12. Presence of PEP carboxylase in C4 plants enable them to avoid photorespiration due to:

- A. Presence of enzyme in high concentration
- B. Absence of Rubisco
- C. PEP carboxylase being strictly carboxylase
- D. High yield of enzyme

13. Fats and proteins can be used as respiratory fuel. Which of the following serves as a common molecule produced through their catabolism?

- A. Acetyl CoA
- B. Pyruvate
- C. G3P
- D. Lactate

14. Which of the following viruses has a double-stranded DNA genome?

- A. Rubella
- B. Influenza
- C. HIV
- D. Smallpox

15. An enzyme is capable of acting on a wide range of related substrates. Which of the following is a property of this enzyme?

- A. Inflexible active site
- B. Regulatory enzyme
- C. Non-regulatory enzyme
- D. Highly specific enzyme

16. All are the characteristics responsible for better survival of encapsulated bacteria except:

- A. High pathogenicity
- B. Withstand dehydration
- C. Strict adhesion to internal surfaces
- D. Easy recognition by host

17. Probiotics in infants formula milk are the normal bacterial flora to humans. They keep the babies healthy by doing all of the following actions except:

- A. Produce important vitamins
- B. Kill pathogenic bacteria
- C. Prevent colonization of pathogens
- D. Enhance immunity

18. Activation of all of the following enzymes needs a regulatory molecule except:

- A. Pepsinogen
- B. Trypsinogen
- C. Erepsin
- D. Chymotrypsinogen

19. Weakened papillary muscles of the right ventricle would result in a constant backflow of blood into:

- A. Right atrium
- B. Left ventricle
- C. Right ventricle
- D. Left atrium

20. A person with a removed gall bladder experiences difficulty in fat digestion due to:

- A. Absence of Bile
- B. Uncontrolled release of Bile
- C. Reduced alkalinity of bile
- D. Absence of bile pigments

21. Enzyme catalase protects the plants cell from:

- A. Dehydration
- B. Photorespiration
- C. Toxic effect of alcohol metabolism
- D. Protein loss

22. Which of the following sets of characteristics is related to veins?

Option Valves Wall Thickness Diameter

- A Present Thick 7-9 μm
- B Absent Thick 40-50 μm
- C Present Thinner 40-50 μm
- D Absent Thinner 40-50 μm

23. Which of the following would NOT be compromised in the absence of the lymphatic system?

- A. Blood pressure
- B. Oxygen-carrying capacity of blood
- C. Blood composition
- D. Defense mechanism

24. The presence of which molecules distinguishes blood from interstitial fluid?

- A. Large proteins and electrolytes
- B. Glucose and RBCs
- C. Antibodies and electrolytes
- D. RBCs and large proteins

25. Plants growing in saline soil face the problem of dehydration due to:

- A. Ψ_w of soil > Ψ_w of root
- B. Ψ_s of soil < Ψ_s of root
- C. Ψ_w of root > Ψ_w of soil
- D. Ψ_w of root = Ψ_w of soil

26. During the Covid-19 epidemic, the plasma of recovered patients was injected in covid patients. This proved quite effective. Which component of plasma do you think was responsible for this?

- A. Plasminogen
- B. Interferons
- C. Antibodies
- D. Interleukin - I

27. Choose the one which is an example of artificial active immunity:

- A. Fetus receiving antibodies of mother through placenta
- B. Mother receiving MMR shots
- C. Baby receiving antibodies
- D. Prevention of a disease due to previous infection

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28. Which of the following types of T cells are required for the activation of B cells?

- A. Helper T cells
- B. Cytotoxic T cells
- C. Suppressor T cells
- D. Memory T cells

29. What is the fate of a neurotransmitter after the transmission of a nerve impulse across the synapse?

- A. It is taken into the postsynaptic neuron
- B. Remains bound to the postsynaptic membrane
- C. Remains stray in the synaptic cleft
- D. Broken down by enzymes

30. Which immediate change is brought about in the postsynaptic membrane on binding with excitatory neurotransmitter?

- A. Calcium gates open
- B. Sodium gates open
- C. Sodium gates close
- D. Sodium-potassium pump ceases to work

31. During the conduction of a nerve impulse, hyperpolarization would not occur if:

- A. Sodium gates didn't close in time
- B. Potassium gates were not so lousy
- C. Sodium-potassium pump stopped working
- D. Calcium gates open instantly

32. Which of the following is a characteristic of an electrical synapse?

- A. Presence of neurotransmitters
- B. Transmission of nerve impulse
- C. Sodium-potassium gradient
- D. Absence of neurotransmitter

33. Which option given below characterizes the refractory period?

- A. Reversal of charges across neural membrane
- B. Change in the type of ions across the membrane
- C. Next impulse can be conducted
- D. Membrane potential +50mV

34. During complex activity of flight, birds require the coordination of many skeletal muscles. Which part of their brain has to be well-developed?

- A. Amygdala
- B. Cerebrum
- C. Cerebellum
- D. Thalamus

35. Which part of the brain is actively used by a mathematician trying to formulate a new equation?

- A. Hippocampus
- B. Cerebrum
- C. Amygdala
- D. Pons

36. A desert mammal faces severe dehydration in a hot sunny day. Which internal condition would lead to secretion of ADH?

- A. High osmotic pressure of blood
- B. High blood pressure
- C. Low osmotic pressure of blood
- D. Low solute potential of blood

37. Which disorder would be diagnosed by a doctor on seeing a patient with thick and dry skin, puffy eyes, and low metabolic rate?

- A. Cretinism
- B. Cushing disease
- C. Myxedema
- D. Addison's disease

38. Choose the one related to hypoparathyroidism:

- A. Kidney stones
- B. Hypercalcemia
- C. Weakness of muscles
- D. Tetany

39. Choose the mismatched pair:

- A. Graafian follicle - progesterone
- B. ICSH - interstitial cell
- C. Estrogen - inhibits FSH
- D. LH - ovulation

40. Which of the following is an example of a negative feedback mechanism?

- A. Aggregation of platelets during wound healing
- B. Labour contraction
- C. Milk secretion during suckling
- D. Control of body temperature

41. Most of the carbon dioxide in blood is transported as bicarbonate ions. Choose the event NOT taking place during gaseous exchange at the tissue level:

- A. Formation of HHb
- B. Formation of sodium bicarbonate
- C. Formation of oxyhemoglobin
- D. Chloride shift

42. [Insert Diagram Here - Ensure it is clear and readable]

All are related to "X" except:

- A. It passes information to the brain
- B. It passes information to sensory neurons
- C. It synapses with the axon of sensory neurons
- D. It is present in gray matter

43. Which one is the function of plasma membrane proteins?

- A. Restrict entry of polar molecules
- B. Prevention of freezing during cold weather
- C. Movement of ions in and out of the cell
- D. Maintenance of membrane flexibility

44. A lizard detaches its tail when attacked by a predator. This is an example of:

- A. Autophagy
- B. Autolysis
- C. Phagocytosis
- D. Intracellular digestion

45. Choose the option showing the correct set of characteristics for intermediate filaments:

Option	Diameter	Composition	Function
A	8-10 nm	Vimentin	Mechanical support
B	0.2-25 μ m	Vimentin	Cilia flagella
C	8-10 nm	Tubulin	Muscle contraction
D	7 nm	Tubulin	Cyclosis

46. Nucleo proteins are involved in:

- A. Cell to cell recognition
- B. Passing hereditary information to the next generation

- C. Ensuring fast speed of nerve impulse
D. Acting as a cell surface marker

47. If the reproductive cycle of a female starts on the 10th of July, the ovulation is most likely to occur on:

- A. 1st August
B. 28th of July
C. 24th of July
D. 5th August

48. Which of the following would be produced as a result of reduction division during gametogenesis?

- A. Oogonium
B. Primary oocyte
C. Primary spermatocyte
D. Secondary oocyte

49. What will be the probability of purple and terminal flowers in the Pea plant in the F₂ generation, if we cross true-breeding purple axial flower plant with a white terminal flower plant?

- A. 1/16
B. 3/16
C. 9/16
D. 1/2

50. A carrier female for hemophilia is married to an affected male. What would be the probable percentage for their sons to be affected?

- A. 100%
B. 50%
C. 25%
D. 0%

51. Which of the following is NOT related to the ABO blood group system?

- A. It is an example of multiple alleles
B. IA and IB are codominant
C. It doesn't code for any antigen
D. It obeys Mendel's laws of inheritance

52. Which of the following options is CORRECT for pattern baldness?

- A. It is sex-linked trait
B. Occurs due to hormonal differences between sexes
C. Heterozygous male is normal
D. Heterozygous female is normal

53. You must have often heard about the hamstring injury of players. Which of the following is CORRECT about hamstring muscles?

- A. It is an extensor muscle
B. Its insertion is on the tibia
C. Originate from pelvic girdle and top of femur
D. Originate from ilium and femur

54. Choose the correct option for muscle in a relaxed position:

- A. Exposed binding sites on actin
B. Broad H-zone in sarcomere
C. Formation of cross bridges
D. Ca⁺⁺ released in cytosol

55. Children of a mason do not inherit strong muscles developed by the father due to hard labour.

This is an example of:

- A. Survival of the fittest
B. Overproduction of offspring
C. Not inheriting acquired characters
D. Use and disuse of organs

57. Select the greatest number of particles in the following:

- A. 2g of Sodium (atomic mass of sodium = 23)
B. 2g of Hydrogen gas (atomic mass of H = 1)
C. 2g of Nitrogen gas (atomic mass of N = 14)
D. 2g of Carbon dioxide gas (atomic mass of C = 12, O = 16)

58. The value of "l" for a 4p orbital is:

- A. 0
B. 1
C. 2
D. 3

59. The element having the electronic configuration of noble gas notation (Kr) 5s²4d⁶ is:

- A. Sr₃₈
B. Ru₄₄
C. Pd₄₆
D. Zr₄₀

60. Choose the allowed sets of quantum numbers from the following:

- A. n = 3, l = 2, m = 0, s = +1/2
B. n = 3, l = 3, m = 0, s = -1/2
C. n = 4, l = 3, m = 4, s = +1/2
D. n = 4, l = 2, m = 4, s = -1/2

61. A gas has a volume of 10dm³ at 10°C. At what temperature will the volume of the gas be reduced to half?

- A. 283K
B. 566K
C. 142K
D. 373K

62. The relationship between the absolute temperature and the velocities of the gas molecules is given by:

- A. $C_{rms} = \sqrt{3RT/M}$
B. $PV = nRT$
C. $V = \sqrt{2Ek/m}$
D. $PV = 1/3mNc^2$

63. The maximum polarizability is exhibited in:

- A. C₆H₁₄
B. C₃H₆
C. C₃H₁₂
D. C₂H₆

64. Which of the following compound have any characteristic heat of fusion except?

- A. NaCl
B. Aluminium oxide
C. Iron oxide
D. Silicates

65. If the external pressure is reduced to half, the boiling point of ethanol will be:

- A. Greater than 78°C
- B. Less than 78°C
- C. Equal to 78°C
- D. Reduced to half

66. Iodine is a poor conductor of electricity because of:

- A. Face centered cubic structure
- B. Body centered cubic structure
- C. Tetragonal structure
- D. Hexagonal structure

67. Predict the shape of CsCl having radius ratio of 0.93.

- A. Tetrahedral
- B. Octahedral
- C. Body centered cubic
- D. Hexagonal

68. The solubility of PbS at 25°C is 4.0×10^{-28} . Then ionic concentration will be:

- A. 4×10^{-28}
- B. 2×10^{-14}
- C. 1×10^{-14}
- D. 3.0×10^{-10}

69. What conditions should be applied to minimize the leftover reactants in Ammonia synthesis?

- A. 200atm, 500°C
- B. 400atm, 200°C
- C. 100atm, 400°C
- D. 200atm, 400°C

70. Select the buffer solution having highest pH:

- A. 0.1M CH₃COOH, 0.01M CH₃COO⁻
- B. 0.1M CH₃COOH, 0.05M CH₃COO⁻
- C. 0.1M CH₃COOH, 0.10M CH₃COO⁻
- D. 0.1M CH₃COOH, 0.15M CH₃COO⁻

71. The formation of hydrogen gas can be increased by reacting which Zn sample with 1M HCl solution?

- A. 1g Zn Rod
- B. 1g Zn Pellets
- C. 1g Zn Ribbon
- D. 1g Zn Powder

72. $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{sunlight}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$

Predict the order of reaction:

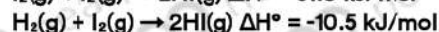
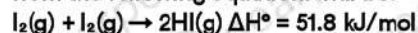
- A. 2nd
- B. 1st
- C. Zero
- D. 3rd

73. Which of the following mechanism is consistent with the rate law $\text{Rate} = k[\text{NO}]^2[\text{H}_2]$?

- A. $2\text{NO} + \text{H}_2 \rightarrow \text{N}_2 + \text{H}_2\text{O}_2$ (slow)
 $\text{H}_2\text{O}_2 + \text{H}_2 \rightarrow 2\text{H}_2\text{O}$ (fast)
- B. $\text{NO} + \text{H}_2\text{O}_2 \rightarrow \text{N}_2\text{O} + \text{H}_2\text{O}_2$ (slow)
 $\text{N}_2\text{O} + \text{H}_2 \rightarrow \text{N}_2 + \text{H}_2\text{O}$ (fast)
- C. $2\text{NO} + \text{H}_2 \rightarrow \text{N}_2\text{O} + \text{H}_2$ (slow)
 $\text{N}_2\text{O} + \text{H}_2 \rightarrow \text{N}_2 + \text{H}_2\text{O}$ (fast)
- D. $\text{NO} + \text{H}_2 \rightarrow \text{N}_2\text{O}$ (slow)

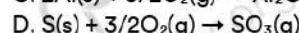
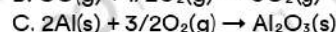
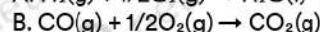
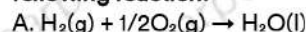
$\text{O}_2 + \text{N}_2\text{O} \rightarrow \text{N}_2\text{O}$ (fast)

74. ΔH° for the sublimation of one mole of iodine from the following equations will be:



- A. 41.3 kJ/mol
- B. 62.3 kJ/mol
- C. 53.5 kJ/mol
- D. 36.5 kJ/mol

75. Identify standard enthalpy of a reaction for the following reaction:



76. Expansion takes place when a gas is evolved during a chemical reaction between marble chips and dilute HCl. Predict the energy change and work done:

- A. w is positive, q is negative
- B. w is negative, q is positive
- C. q is positive, no work done
- D. w is positive, q is positive

77. Zn rod acts as cathode when coupled with magnesium electrode. This is because the reduction potential of:

- A. Zn > Mg
- B. Zn < Mg
- C. Zn = Mg
- D. Zn = 0

78. Placing a rod of iron metal in a solution of CuSO₄:

- A. Cu will be deposited
- B. Fe is precipitated out
- C. Cu and Fe both dissolve
- D. No reaction taken place

79. In CH₃Cl, bond length of C-Cl is 176.7 pm and covalent radius of Cl atom is 99.4 pm, the covalent radius of carbon atom is:

- A. 66.3 pm
- B. 276.1 pm
- C. 175.4 pm
- D. 77.3 pm

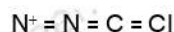
80. Correct order of decreasing electron affinities of group VII is:

- A. F > Cl > Br > I
- B. F > Cl > I > Br
- C. F < Cl < Br < I
- D. Cl < F < Br < I

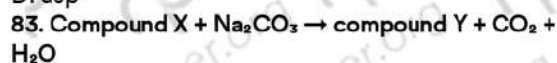
81. Predict the highest bond energy of the following single bond:

- A. C - H
- B. C - N
- C. C - O
- D. C - C

82. Identify the type of hybridization of nitrogen in the following molecule:

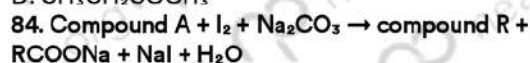


- A. sp
B. sp^2
C. sp^3
D. dsp^2



The compound Y is:

- A. $CH_2 = CH - CH_2 - CH_3$
B. CH_3CH_2CHO
C. CH_3COOH
D. $CH_3CH_2COCH_3$



Identify compound B.

- A. Acetone
B. Acetic acid
C. Acetamide
D. Acetic anhydride

85. Select the carboxylic acid with highest melting point:

- A. Ethanoic acid
B. Propanoic acid
C. Butanoic acid
D. Pentanoic acid

86. Identify the following compounds having shortest bond length:

- A. Methyl amine
B. Formamide
C. Formic acid
D. Ethanol

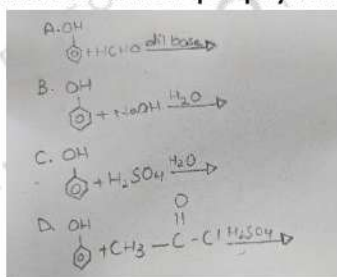
87. Identify the alkene which gives only one type of aldehyde upon ozonolysis:

- A. 1-pentene
B. 2-methyl propene
C. 2-butene
D. 2,3-dimethyl-2-butene

88. Identify the correct increasing order of reactivity of carbonyl compound towards nucleophilic addition:

- A. $HCHO < CH_3CHO < CH_3COCH_3 < CH_3CH_2CHO$
B. $CH_3CH_2CH_2CHO < CH_3COCH_3 < CH_3CHO < HCHO$
C. $CH_3CH_2CH_2CH_2OH < CH_3COCH_3 < H_2CH_2CHO < HCHO$
D. $CH_3CH_2CH_2CHO < CH_3COCH_3 < CH_3CHO < HCHO$

89. Bakelite is formed upon polymerization of:



90. The increasing order of reactivity of alcohols towards nucleophile is:

- A. 2-methyl-2-pentanol < 3-methyl-2-pentanol < 2-methyl-1-pentanol
B. 2-methyl-2-pentanol < 3-methyl-2-pentanol < 2-methyl-1-pentanol
C. 2-methyl-1-pentanol > 3-methyl-2-pentanol > 2-methyl-2-pentanol
D. 2-methyl-1-pentanol > 3-methyl-2-pentanol > 2-methyl-2-pentanol

91. The most reactive alcohol towards Lucas reagent is:

- A. 2-butanol
B. 2-methyl-1-butanol
C. 2-methyl-2-butanol
D. 2,2-dimethyl-1-butanol

92. The most readily sulphonated compound is:

- A. Benzene
B. Chlorobenzene
C. Nitrobenzene
D. Toluene

93. Select the alkene showing geometrical isomerism:

- A. 3-methyl-1-butene
B. Methyl cyclopentane
C. 2,3-dimethyl-2-butene
D. 3-methyl-2-pentene

94. Trend in ionization energy of group I elements in increasing order will be:

- A. $Na < Mg < Al < Si$
B. $Mg < Na < Al < Si$
C. $Si < Al < Mg < Na$
D. $Al < Si < Na < Mg$

95. When a metal carbonate is heated at 100°C , which of the following compound will readily decompose?

- A. $BaCO_3$
B. $MgCO_3$
C. $BeCO_3$
D. $SrCO_3$

PHYSICS

96. At what angle of applied force, work done will be 50%?

- A. 30°
B. 60°
C. 90°
D. 45°

97. What is the power of electric motor when it performs work of $64 \times 10^6 \text{ J}$ in 8 seconds?

- A. 8 Kilowatts
B. 7 Kilowatts
C. 8 Megawatts
D. 7 Megawatts

98. The relation between K.E and momentum P is given by:

- A. $K.E = \frac{1}{2} P/M$
- B. $K.E = \frac{1}{2} P/M^2$
- C. $K.E = \frac{1}{2} P^2/M$
- D. $K.E = \frac{1}{2} P^2/M^2$

99. When dolphin leaves the water it has lots of kinetic energy. At its highest point it's energy is:

- A. Kinetic energy
- B. Potential energy
- C. Elastic potential energy
- D. Neither kinetic energy nor potential energy

100. The absolute potential energy is given as $U_g = -GMm/R$. The negative sign indicates that Earth's gravitational field for mass "m" is:

- A. Repulsive
- B. Less attractive
- C. Attractive
- D. More repulsive less attractive

101. The velocity of an object moving in a circle is:

- A. Constant
- B. Variable
- C. Zero
- D. Negative

102. If you stop your car quickly by wearing seat belts, chance of injury is greatly reduced because seat belt applied:

- A. Extra force
- B. Perpendicular force
- C. Opposite force
- D. Zero force

103. A ball with momentum 8 kg m/s hits a wall and bounces straight back without losing K.E. The change in momentum of the ball is:

- A. 4 Ns
- B. -16 Ns
- C. 16 Ns
- D. 8 Ns

104. In projectile motion for which angle maximum height is half of its range?

- A. 73°
- B. 65°
- C. 63°
- D. 68°

105. Sara goes around a circular track that has diameter of 20m. If she runs around the entire track for a distance of 180m, what is her angular displacement?

- A. 16 radians
- B. 18 radians
- C. 50 radians
- D. 8 radians

106. Angle swept by minute hand in one minute is:

- A. 6°
- B. 36°
- C. 8°
- D. 20°

107. To find the direction of angular displacement:

- A. Grasp the axis of rotation in right hand
- B. Grasp the axis of rotation in left hand
- C. Put the thumb of right hand in the direction of circular motion
- D. Put the thumb of left hand in the direction of circular motion

108. A particle moves in a circle of radius 200cm with a linear speed of 20 m/s. Find the angular velocity:

- A. 2 rad s^{-1}
- B. 200 rad s^{-1}
- C. 20 rad s^{-1}
- D. 10 rad s^{-1}

109. For anti-clockwise rotation the angular displacement is:

- A. Negative
- B. Positive
- C. Null
- D. Zero

110. Speed of sound in solid is greater than speed of sound in air because ratio:

- A. $(E/\rho)_{\text{solid}} < (E/\rho)_{\text{air}}$
- B. $(E/\rho)_{\text{solid}} > (E/\rho)_{\text{air}}$
- C. $(E/\rho)_{\text{solid}} = (E/\rho)_{\text{air}}$
- D. $(E/\rho)_{\text{solid}} \leq (E/\rho)_{\text{air}}$

111. A body of mass 10 kg is connected to a spring and it is oscillating on a horizontal frictionless surface. If the maximum displacement of body is 20cm and spring constant is 20Nm^{-1} . What is the acceleration of the body?

- A. 2.2 ms^{-2}
- B. 4 ms^{-2}
- C. 2 ms^{-2}
- D. 0.4 ms^{-2}

112. A normal person can hear sound waves ranging in frequency from 20Hz to 20KHz. The maximum wavelength is:

- A. 17mm
- B. 17cm
- C. 17km
- D. 17m

113. NaCl dissolves quickly in water due to:

- A. Low ϵ_r
- B. High ϵ_r
- C. $\epsilon_r = 0$
- D. $\epsilon_r = \infty$

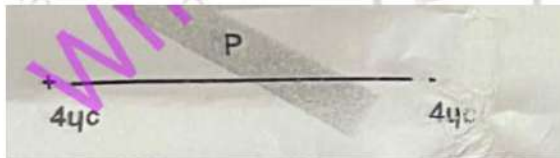
114. A capacitor can be fully charge because time required to charge is:

- A. 1 time constant
- B. 2 time constant
- C. 4 time constant
- D. Infinity

115. The electric field at distance of 10cm from a $2\mu\text{C}$ point charge is:

- A. 1.0 C
- B. 180 C
- C. 18 C
- D. 1800 C

116.



At midpoint P:

- A. $V = 0, E \neq 0$
- B. $V = 0, E = 0$
- C. $V \neq 0, E = 0$
- D. $V \neq 0, E \neq 0$

117. A process in which all the heat energy is used for increasing internal energy of the system is known as:

- A. Isobaric
- B. Isochoric
- C. Isothermal
- D. Adiabatic

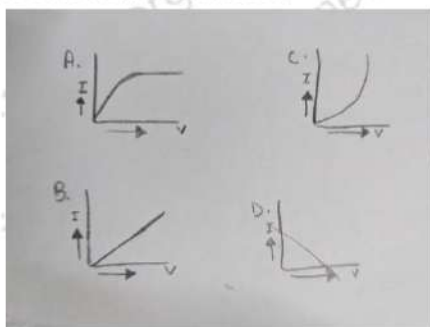
118. The phase shift between voltage and current when AC flows through a capacitor is:

- A. $\pi/2$
- B. π
- C. $\pi/4$
- D. 2π

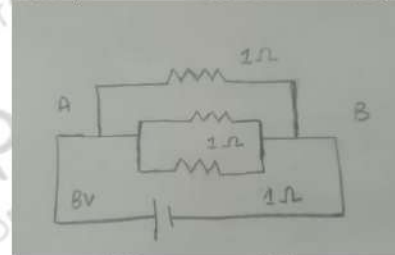
119. A particle has a charge of 1C falls through a potential difference of 5V. The energy required by it is:

- A. 5×10^{-19} J
- B. 8×10^{-19} J
- C. 8 J
- D. 5 J

120. Which Graph explains non-ohmic material whose resistance decreases?



121. Equivalent resistance between point A & B is



- A. $3/2 \Omega$
- B. $1/3 \Omega$
- C. 3Ω
- D. $2/3 \Omega$

122. Four fans of 100W each, two bulbs of 100W, each works for 2 hours daily. The energy consumed in 30 days will be:

- A. 4 KWh
- B. 1 KWh
- C. 2 KWh
- D. 10 KWh

123. The wire of length 100cm is perpendicular to the magnetic field of 0.5T. If wire carries 10A of current then force acting on the wire will be:

- A. 50 N
- B. 25 N
- C. 10 N
- D. 5 N

124. The substance having negative temperature coefficient are:

- A. Insulators
- B. Conductors
- C. Semi-conductor
- D. Alloys

125. If the value of electric field intensity between the plates increases two times then energy stored in a capacitor becomes:

- A. Half
- B. Double
- C. One Forth
- D. Quadruple

126. The horizontal range of projectile will be maximum when:

- A. $\sin \theta = 1$
- B. $\sin 2\theta = 1$
- C. $\sin \theta = 0$
- D. $\sin 2\theta = 0$

127. How many degrees in $2\pi/5$ radians?

- A. 80°
- B. 50°
- C. 72°
- D. 120°

128. A transformer used a 220V line delivers 22A at 1800V. What current is drawn from the line (assume 100% efficiency)?

- A. 22A
- B. 180A
- C. 206A
- D. 50A

129. For rectifying ac to dc, the transformer used is:

- A. With low input voltage
- B. With low input resistance
- C. Step up
- D. Step down

130. $15F = 10 + _ + Y _ + Q$

- A. X = 10, Y = 5
- B. X = 8, Y = 7
- C. X = 15, Y = 0
- D. X = 5, Y = 10

131. One rem is equal to:

- A. 0.01 Gy/RBC
- B. 0.01 Gy x RBC
- C. 0.01 RBC
- D. 0.01 Cy

132. 1 red is equal to:

- A. 0.01 J/Kg
- B. 0.01 K/J
- C. 0.01 J
- D. 0.01 Kg

133. 60 kg man absorbs lethal whole body equivalent dose of 200 rem with RBC factor of 10, energy absorbed is:

- A. 8J
- B. 9J
- C. 10J
- D. 12J

134. Somatic effect causes:

- A. Genes deformation
- B. Chromosomes deformation
- C. Skin burns
- D. Eye burns

135. Each person experiences the background radiation dose in one year:

- A. 1mSv
- B. 1mGy
- C. 1Gy
- D. 1Sv

136. The plane ought to be taking off in a minute. The underlined is:

- A. Linking verb
- B. Modal auxiliary
- C. Helping verb
- D. Finite verb

137. During the heavy rain, the sky grew dark. The underlined verb is:

- A. Non-finite
- B. Transitive
- C. Di-transitive
- D. Linking

138. His courage brought him honour. The underlined verb is:

- A. Intransitive
- B. Di-transitive
- C. Complex transitive
- D. Linking

139. The teacher assigned the students an assignment to be completed during vacation. The underlined verb is:

- A. Mono-transitive
- B. Di-transitive
- C. Complex transitive
- D. Intransitive

140. Of two evils choose the less. The sentence carries an adjective that is:

- A. Comparative
- B. Positive
- C. Numerical
- D. Distributive

141. Are there any mango trees in this garden? The underlined word is:

- A. Adjective Quality
- B. Adjective of number
- C. Indefinite pronoun
- D. Reciprocal Pronoun

142. This is the very thing we want. The underlined word is an:

- A. Emphatic pronoun
- B. Emphasizing adjective
- C. Reflexive pronoun
- D. Exclamatory Adjective

143. Don't be in such a hurry. The sentence contains an adjective of:

- A. Number
- B. Distributive
- C. Quantity
- D. Demonstrative

144. Fill in the blank with the appropriate verb indicating Past Perfect Continuous Tense:

He _____ from the homework regularly since he joined his office.

- A. Had walked

- B. Had been walking
- C. Walked
- D. Has been walking

145. "All desire wealth, some acquire it." The sentence exemplifies:

- A. Present indefinite
- B. Past Indefinite
- C. Present Perfect
- D. Simple Future

146. Choose the incorrect sentence structure:

- A. Justice, as well as mercy, allows it.
- B. In him was centered their love and ambition.
- C. The wages of sin is death.
- D. Fire and water do not agree.

147. "If I were a doctor, I would serve humanity." The sentence is an example of:

- A. Zero
- B. Type II
- C. Type III
- D. Type I

148. Choose the sentence which is correctly structured:

- A. If we had found him earlier, we could have saved his life.
- B. If we had found him earlier, we could save his life.
- C. If we had found him earlier, we have saved his life.
- D. If we had found him earlier, we could save in his life.

149. "Owing to his bad luck, he got into an accident on the eve of his examination." What type of sentence is this ?

- A. Complex sentence
- B. Simple sentence
- C. Compound sentence
- D. Complex-compound sentence

150. . Which of the following sentence is correctly punctuated :

- A. "My siblings bags' were stolen by the boys' chief whose gun's color is black."
- B. "My siblings's bags were stolen by the boy's chief whose guns' color is black."
- C. "My siblings bags were stolen by the boys chief whose gun color is black."
- D. "My siblings' bags were stolen by the chief of the boys, whose gun was black."