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CEE Based Model Questions

(Set-C)

CEE 200 Most Probable MCQs prepared for MBBS, BDS & BSc Nursing Aspirants

Instruction:

Marking Scheme: +1 mark for each correct answer and -0.25 mark for each incorrect answer.

Zoology
40 MCQs | 4 options each
Questions

1. Which cell junction chiefly prevents leakage between adjacent epithelial cells?

A. Desmosome
B. Tight junction
C. Gap junction
D. Hemidesmosome

2. Which part of the nephron is especially responsive to ADH for water reabsorption?

A. Ascending limb of the loop of Henle
B. Glomerulus
C. Collecting duct
D. Bowman's capsule

3. The normal pacemaker of the human heart is the:

A. AV node
B. SA node
C. Bundle of His
D. Purkinje fibres

4. Which immunoglobulin can cross the placenta and provide passive immunity to a fetus?

A. IgA
B. IgM
C. IgE
D. IgG

5. Fertilization in humans usually occurs in the:

A. Cervix
B. Uterine cavity
C. Ampulla of the fallopian tube
D. Vagina

6. Which hormone stimulates Leydig cells to produce testosterone?

A. FSH
B. LH
C. Prolactin
D. Oxytocin

7. A person with blood group AB normally has which antibodies in plasma against A and B antigens?

A. Anti-A only
B. Anti-B only
C. Both anti-A and anti-B
D. Neither anti-A nor anti-B

8. The primary site of gaseous exchange in human lungs is the:

A. Bronchi
B. Terminal bronchioles
C. Alveoli
D. Pleura

9. Which vitamin is essential for the synthesis of several blood-clotting factors?

A. Vitamin A
B. Vitamin C
C. Vitamin K
D. Vitamin E

10. During skeletal muscle contraction, calcium binds to:

A. Myosin head
B. Troponin C
C. Tropomyosin directly
D. Actin's active site

11. Which brain region plays a major role in thermoregulation?

A. Medulla oblongata
B. Hypothalamus
C. Cerebellum
D. Occipital lobe

12. Which enzyme joins Okazaki fragments during DNA replication?

A. DNA helicase
B. DNA ligase
C. RNA primase
D. Topoisomerase

13. Which cells produce and secrete large quantities of antibodies?

A. Neutrophils
B. Plasma cells
C. Erythrocytes
D. Platelets

14. The functional contractile unit of striated muscle is the:

A. Myofibril
B. Sarcomere
C. Fascicle
D. Tendon

15. Glucose absorption from the intestinal lumen along with sodium is an example of:

A. Simple diffusion
B. Facilitated diffusion only
C. Secondary active transport
D. Primary active transport by a glucose pump

16. Which hormone can lower blood calcium concentration?

A. Parathyroid hormone
B. Calcitonin
C. Aldosterone
D. Glucagon

17. Which fetal blood vessel normally becomes the ligamentum arteriosum after birth?

A. Foramen ovale
B. Ductus arteriosus
C. Ductus venosus
D. Umbilical vein

18. Which cells form myelin in the peripheral nervous system?

A. Astrocytes
B. Oligodendrocytes
C. Schwann cells
D. Microglia

19. A codon is a three-nucleotide sequence found on:

A. DNA polymerase
B. mRNA
C. Ribosomal proteins
D. Amino acids

20. Which enzyme begins protein digestion in the stomach?

A. Trypsin
B. Pepsin
C. Amylase
D. Pancreatic lipase

21. Vaccination with an antigen generally produces:

A. Natural passive immunity
B. Artificial passive immunity
C. Artificial active immunity
D. Innate immunity only

22. Which structure controls the amount of light entering the eye?

A. Cornea
B. Iris
C. Lens
D. Retina

23. The principal nitrogenous waste excreted by adult humans is:

A. Ammonia
B. Urea
C. Uric acid
D. Creatine

24. Which gland secretes melatonin?

A. Pineal gland
B. Thymus
C. Adrenal cortex
D. Anterior pituitary

25. Crossing over between homologous chromosomes occurs during which stage of meiosis?

A. Leptotene
B. Zygotene
C. Pachytene
D. Telophase I

26. Which enzyme converts fibrinogen into fibrin during blood clotting?

A. Thrombin
B. Plasmin
C. Heparin
D. Prothrombin

27. The main function of pulmonary surfactant is to:

A. Increase surface tension
B. Reduce surface tension
C. Transport oxygen in blood
D. Stimulate mucus secretion

28. Which hormonal surge triggers ovulation?

A. FSH surge only
B. LH surge
C. Progesterone surge
D. Prolactin surge

29. Which duct connects the gallbladder to the biliary duct system?

A. Cystic duct
B. Pancreatic duct
C. Hepatic vein
D. Ureter

30. Which type of RNA carries amino acids to the ribosome?

A. mRNA
B. rRNA
C. tRNA
D. snRNA

31. The loop of Henle is important for:

A. Producing red blood cells
B. Creating an osmotic gradient in the renal medulla
C. Filtering plasma proteins
D. Secreting insulin

32. Which cranial nerve carries the sensation of smell?

A. Optic nerve
B. Olfactory nerve
C. Trigeminal nerve
D. Facial nerve

33. Which organelle modifies, sorts and packages proteins for secretion?

A. Lysosome
B. Golgi apparatus
C. Peroxisome
D. Centrosome

34. The refractory period of a neuron helps ensure:

A. Backward propagation of action potentials
B. One-way propagation of an action potential
C. Permanent depolarization
D. Complete absence of ion movement

35. Which hormone promotes milk ejection from mammary glands?

A. Prolactin
B. Oxytocin
C. Estrogen
D. FSH

36. Which leukocytes are normally the most abundant in peripheral blood?

A. Eosinophils
B. Basophils
C. Neutrophils
D. Monocytes

37. Inadequate insulin secretion or action can lead to:

A. Diabetes mellitus
B. Diabetes insipidus
C. Addison disease
D. Myasthenia gravis

38. The corpus luteum primarily secretes:

A. Testosterone
B. Progesterone
C. Thyroxine
D. ADH

39. Which connective tissue cell releases histamine during many allergic reactions?

A. Fibroblast
B. Mast cell
C. Chondrocyte
D. Osteocyte

40. Most digestion and absorption of dietary nutrients occur in the:

A. Stomach
B. Small intestine
C. Large intestine
D. Esophagus

Botany
40 MCQs | 4 options each
Questions

41. Which plant tissue transports sugars from source tissues to sink tissues?

A. Xylem
B. Phloem
C. Cork
D. Sclerenchyma

42. The Casparian strip is present in the:

A. Leaf epidermis
B. Root endodermis
C. Palisade mesophyll
D. Phloem companion cells

43. Which plant hormone promotes stomatal closure during water stress?

A. Auxin
B. Gibberellin
C. Abscisic acid
D. Cytokinin

44. The first stable product of carbon fixation in most C4 plants is:

A. 3-phosphoglycerate
B. Oxaloacetate
C. Ribulose bisphosphate
D. Glucose

45. Which enzyme is responsible for biological nitrogen fixation?

A. Nitrogenase
B. Nitrate reductase
C. Rubisco
D. Catalase

46. Which generation produces spores by meiosis in plants with alternation of generations?

A. Gametophyte
B. Sporophyte
C. Endosperm
D. Pollen tube

47. Double fertilization in angiosperms produces:

A. Two embryos
B. A zygote and the primary endosperm nucleus
C. Two endosperms
D. An embryo and a pollen tube

48. Lateral roots originate mainly from the:

A. Pericycle
B. Cortex
C. Epidermis
D. Pith

49. Photorespiration begins when Rubisco acts as a/an:

A. Carboxylase on PEP
B. Oxygenase on RuBP
C. Kinase on ATP
D. Hydrolase on starch

50. Why do most leaves appear green?

A. Chlorophyll absorbs green light most strongly
B. Chlorophyll reflects or transmits much of the green light
C. Carotene absorbs only green light
D. Leaves contain no pigments that absorb visible light

51. Which tissue provides flexible support to young, growing plant organs?

A. Collenchyma
B. Sclerenchyma fibres
C. Cork
D. Mature xylem vessels

52. Pollen grains develop from:

A. Megaspores
B. Microspores
C. Zygotes
D. Synergids

53. Which floral structure receives pollen grains?

A. Anther
B. Stigma
C. Ovary wall
D. Filament

54. In a typical dicot stem, vascular bundles are arranged:

A. Scattered throughout the ground tissue
B. In a ring
C. Only in the pith
D. In the epidermis

55. Water rises through xylem largely because of:

A. Root pressure alone
B. Transpiration pull
C. Phloem loading
D. Guttation

56. Tendrils coiling around a support demonstrate:

A. Phototropism
B. Thigmotropism
C. Hydrotropism
D. Geotropism

57. In cereal grains, the principal food-storage tissue is commonly the:

A. Endosperm
B. Testa
C. Micropyle
D. Funicle

58. Which of the following is a gymnosperm?

A. Mango
B. Pinus
C. Pea
D. Sunflower

59. Stomatal opening and closing primarily depend on changes in:

A. Guard-cell turgor
B. Xylem lignin
C. Pollen viability
D. Root-cap thickness

60. Which plant hormone promotes cell division and can delay leaf senescence?

A. Cytokinin
B. Ethylene
C. Abscisic acid
D. Jasmonic acid

61. The fleshy part of a strawberry develops mainly from the enlarged:

A. Ovary
B. Receptacle
C. Seed coat
D. Style

62. Which plant disease is caused by a virus?

A. Citrus canker
B. Tobacco mosaic
C. Wheat rust
D. Late blight of potato

63. Which bacterium commonly forms nitrogen-fixing root nodules in legumes?

A. Rhizobium
B. Lactobacillus
C. Nitrosomonas
D. Acetobacter aceti

64. The dominant generation in bryophytes is the:

A. Sporophyte
B. Gametophyte
C. Seedling
D. Embryo

65. Secondary growth in vascular plants is mainly produced by:

A. Apical meristems only
B. Vascular cambium and cork cambium
C. Guard cells
D. Root hairs

66. Which structure protects the root apical meristem as the root grows through soil?

A. Root cap
B. Stomatal pore
C. Lenticel
D. Leaf sheath

67. The Calvin cycle takes place in the:

A. Thylakoid lumen
B. Chloroplast stroma
C. Mitochondrial matrix
D. Cytosol only

68. The effect of day length on flowering is called:

A. Vernalization
B. Photoperiodism
C. Plasmolysis
D. Abscission

69. Which cells are closely associated with sieve-tube elements in angiosperm phloem?

A. Companion cells
B. Tracheids
C. Guard cells
D. Bulliform cells

70. A plant that completes its life cycle in one growing season is called:

A. Biennial
B. Annual
C. Perennial
D. Epiphyte

71. The conversion of nitrate into nitrite in plants is catalysed by:

A. Nitrate reductase
B. Nitrogenase
C. Rubisco
D. Amylase

72. Which leaf tissue usually contains the greatest concentration of chloroplasts?

A. Upper epidermis
B. Palisade mesophyll
C. Lower cuticle
D. Leaf veins only

73. Transfer of pollen from the anther to the stigma of the same flower is called:

A. Xenogamy
B. Autogamy
C. Geitonogamy
D. Apomixis

74. Which tissue mainly transports water and mineral ions from roots to aerial parts?

A. Phloem
B. Xylem
C. Epidermis
D. Cork

75. Which cell division generally produces genetically similar daughter cells for growth?

A. Meiosis I
B. Mitosis
C. Reduction division
D. Crossing over

76. The egg apparatus of a typical angiosperm embryo sac contains:

A. One egg and two synergids
B. Two eggs and one antipodal cell
C. Three polar nuclei
D. Four synergids

77. Which ecological relationship benefits one organism while harming the other?

A. Mutualism
B. Commensalism
C. Parasitism
D. Neutralism

78. Which structure enables vegetative propagation in potato?

A. Tuber
B. Thorn
C. Tendril
D. Pneumatophore

79. The release of liquid droplets through hydathodes at leaf margins is called:

A. Transpiration
B. Guttation
C. Translocation
D. Bleeding

80. Which of the following is a characteristic feature of C4 plants compared with C3 plants?

A. Initial carbon fixation occurs through PEP carboxylase
B. They do not require light
C. They have no chloroplasts
D. They cannot carry out the Calvin cycle

Chemistry
50 MCQs | 4 options each
Questions

81. What is the oxidation number of sulfur in H_2SO_4?

A. +2
B. +4
C. +6
D. −2

82. Which quantum number determines the shape of an atomic orbital?

A. Principal quantum number
B. Azimuthal quantum number
C. Magnetic quantum number
D. Spin quantum number

83. Which gas is evolved when an active metal reacts with dilute hydrochloric acid?

A. Oxygen
B. Hydrogen
C. Chlorine
D. Carbon dioxide

84. Which solution has the highest pH at the same concentration?

A. HCl
B. CH_3COOH
C. NaCl
D. NaOH

85. The hybridization of carbon in ethyne (C_2H_2) is:

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

86. Which intermolecular force is particularly important between water molecules?

A. London dispersion only
B. Hydrogen bonding
C. Metallic bonding
D. Covalent bonding between separate molecules

87. For an exothermic reaction, the enthalpy change (ΔH) is:

A. Positive
B. Negative
C. Always zero
D. Equal to activation energy

88. Which combination forms a buffer solution?

A. HCl and NaCl
B. NaOH and KCl
C. CH_3COOH and CH_3COONa
D. HNO_3 and KNO_3

89. The unit of the rate constant for a first-order reaction is:

A. mol L^{-1} s^{-1}
B. s^{-1}
C. L mol^{-1} s^{-1}
D. L^2 mol^{-2} s^{-1}

90. Oxidation occurs at which electrode in an electrochemical cell?

A. Cathode
B. Anode
C. Salt bridge
D. Voltmeter

91. Which element has the highest electronegativity?

A. Oxygen
B. Nitrogen
C. Fluorine
D. Chlorine

92. Which compound gives a positive iodoform test?

A. Methanol
B. Propanone
C. Benzene
D. Ethanoic acid

93. The major product of adding HBr to propene in the absence of peroxide is:

A. 1-bromopropane
B. 2-bromopropane
C. 1,2-dibromopropane
D. Propanol

94. Which functional group characterizes aldehydes?

A. –COOH
B. –CHO
C. –OH
D. –O–

95. Which reagent is commonly used to distinguish aldehydes from most ketones?

A. Tollens' reagent
B. Sodium chloride solution
C. Dilute hydrochloric acid
D. Limewater

96. Which of the following is an aromatic heterocyclic compound?

A. Cyclohexane
B. Pyridine
C. Propane
D. Cyclobutane

97. Which monomer is used to manufacture PVC?

A. Ethene
B. Chloroethene
C. Styrene
D. Tetrafluoroethene

98. Which gas law relates volume to absolute temperature at constant pressure?

A. Boyle's law
B. Charles's law
C. Dalton's law
D. Graham's law

99. Increasing pressure on a gaseous equilibrium generally favours the side with:

A. More gaseous molecules
B. Fewer gaseous molecules
C. More solid particles
D. Higher activation energy

100. Which salt produces an acidic aqueous solution because of hydrolysis?

A. NaCl
B. KNO_3
C. NH_4Cl
D. CH_3COONa

101. What is the molarity of a solution containing 0.5 mol solute in 2 L of solution?

A. 0.10 M
B. 0.25 M
C. 1.0 M
D. 4.0 M

102. Which alkali metal is the strongest reducing agent in aqueous solution among these options?

A. Lithium
B. Sodium
C. Potassium
D. Caesium

103. Which oxide is amphoteric?

A. Na_2O
B. SO_3
C. Al_2O_3
D. CO_2

104. Ethanol and dimethyl ether exhibit which type of isomerism?

A. Chain isomerism
B. Position isomerism
C. Functional group isomerism
D. Geometrical isomerism

105. Which reagent can convert an alkene into a vicinal diol under mild conditions?

A. Cold, dilute alkaline $KMnO_4$
B. Concentrated HCl
C. Sodium metal
D. Ammoniacal $AgNO_3$

106. Which subatomic particle has the smallest mass?

A. Proton
B. Neutron
C. Electron
D. Alpha particle

107. What is the maximum number of electrons in the shell with principal quantum number n=3n=3n=3?

A. 8
B. 18
C. 32
D. 9

108. Which method is suitable for separating miscible liquids with close boiling points?

A. Filtration
B. Fractional distillation
C. Sublimation
D. Decantation

109. Which of the following is a colligative property?

A. Viscosity
B. Surface tension
C. Elevation of boiling point
D. Colour

110. Which acid is commonly present in vinegar?

A. Citric acid
B. Lactic acid
C. Ethanoic acid
D. Oxalic acid

111. Which reagent can test for carbon-carbon unsaturation in many organic compounds?

A. Bromine solution
B. Limewater
C. Fehling's solution
D. Nessler's reagent

112. Which molecule has trigonal planar geometry around its central atom?

A. NH_3
B. BF_3
C. H_2O
D. CH_4

113. Which catalyst is commonly used in the Haber process?

A. Iron
B. Copper
C. Silver
D. Zinc

114. Which statement about isotopes is correct?

A. They have the same neutrons but different protons

B. They have the same protons but different neutrons

C. They always have different atomic numbers

D. They always have the same mass number

115. Which compound is most likely to undergo an SN1 reaction readily under suitable conditions?

A. Methyl chloride

B. Chloroethane

C. Tert-butyl chloride

D. Chloromethane

116. What is the conjugate base of $H_2PO_4^-$?

A. H_3PO_4
B. HPO_4^{2-}
C. PO_4^{3-}
D. OH^-

117. Which metal is extracted from bauxite?

A. Iron
B. Aluminium
C. Copper
D. Zinc

118. Which gas turns limewater milky?

A. Hydrogen
B. Oxygen
C. Carbon dioxide
D. Nitrogen

119. Which of the following is a strong electrolyte in aqueous solution?

A. Glucose
B. Ethanol
C. Sodium chloride
D. Urea

120. Which compound contains an ester linkage?

A. $CH_3COOCH_2CH_3$
B. CH_3CH_2OH
C. CH_3CHO
D. CH_3COCH_3

121. Which law states that equal volumes of gases at the same temperature and pressure contain equal numbers of molecules?

A. Avogadro's law
B. Graham's law
C. Henry's law
D. Raoult's law

122. Which factor does not change the equilibrium constant for a given reaction?

A. Temperature
B. A catalyst
C. Reaction identity
D. Standard state convention

123. The approximate pH of 1.0×10−31.0 \times 10^{-3}1.0×10−3 M strong HCl is:

A. 1
B. 2
C. 3
D. 11

124. Which of the following is a primary alcohol?

A. Propan-1-ol
B. Propan-2-ol
C. Propanone
D. Ethanal

125. Which element lies at the centre of the heme group in haemoglobin?

A. Magnesium
B. Iron
C. Calcium
D. Cobalt

126. Which of the following is a Lewis acid?

A. NH_3
B. OH^-
C. BF_3
D. Cl^-

127. What is the oxidation state of manganese in $KMnO_4$?

A. +2
B. +4
C. +6
D. +7

128. Which process generally increases the entropy of a substance?

A. Gas condensing to liquid
B. Crystallization
C. Solid melting to liquid
D. Gas compression

129. Which of these polymers is formed by condensation polymerization?

A. Polyethene
B. PVC
C. Nylon-6,6
D. Polystyrene

130. Which statement best describes a catalyst?

A. It changes the equilibrium constant
B. It increases activation energy
C. It provides an alternative pathway with lower activation energy
D. It is always consumed completely

Physics
50 MCQs | 4 options each
Questions

131. A body moves 12 m east and then 5 m west. Its displacement is:

A. 17 m east
B. 7 m east
C. 7 m west
D. 17 m west

132. The slope of a velocity-time graph represents:

A. Displacement
B. Acceleration
C. Momentum
D. Power

133. A 2 kg object accelerates at 3 m/s^2. The net force acting on it is:

A. 1.5 N
B. 5 N
C. 6 N
D. 9 N

134. The dimensional formula of pressure is:

A. MLT−2MLT^{-2}MLT−2
B. ML−1T−2ML^{-1}T^{-2}ML−1T−2
C. ML2T−2ML^2T^{-2}ML2T−2
D. M−1LT−2M^{-1}LT^{-2}M−1LT−2

135. A projectile is launched horizontally. Neglecting air resistance, its horizontal acceleration is:

A. ggg
B. g/2g/2g/2
C. Zero
D. Dependent on its mass

136. The work done by a centripetal force during uniform circular motion is:

A. Positive
B. Negative
C. Zero
D. Infinite

137. If the speed of an object doubles, its kinetic energy becomes:

A. Twice
B. Three times
C. Four times
D. Half

138. The SI unit of power is:

A. Joule
B. Watt
C. Newton
D. Pascal

139. Which quantities are conserved in an isolated elastic collision?

A. Momentum only
B. Kinetic energy only
C. Both momentum and kinetic energy
D. Neither momentum nor kinetic energy

140. Near Earth's surface, gravitational potential energy relative to a chosen reference level is expressed as:

A. GMm/rGMm/rGMm/r in all situations
B. mghmghmgh
C. 12mv2\frac12mv^221mv2
D. F/tF/tF/t

141. A spring obeys Hooke's law when:

A. Force is proportional to extension
B. Force is constant for all extensions
C. Extension depends only on mass
D. The spring is permanently deformed

142. The time period of a simple pendulum undergoing small oscillations depends on:

A. Mass of the bob
B. Amplitude only
C. Length and gravitational acceleration
D. Material of the bob

143. Heat transfer through a vacuum occurs by:

A. Conduction only
B. Convection only
C. Radiation
D. Conduction and convection

144. Specific heat capacity is the heat required to raise the temperature of unit mass of a substance by:

A. 1 K
B. 10 K
C. 100 K
D. Any fixed amount

145. During a phase change at constant pressure, supplied heat primarily changes the:

A. Temperature only
B. Phase and internal energy without a temperature rise during the change
C. Mass
D. Gravitational acceleration

146. For an ideal gas at constant temperature, if its volume is halved, its pressure becomes:

A. Half
B. Double
C. Four times
D. Unchanged

147. The root-mean-square speed of gas molecules increases when:

A. Absolute temperature increases
B. Molecular mass increases at fixed temperature
C. Temperature decreases
D. Gas molecules stop moving

148. The first law of thermodynamics expresses the conservation of:

A. Charge
B. Mass only
C. Energy
D. Momentum

149. The speed of sound in air generally increases with:

A. Increasing temperature
B. Increasing frequency alone
C. Increasing amplitude
D. Decreasing temperature

150. A wave has a frequency of 50 Hz and a wavelength of 4 m. Its speed is:

A. 12.5 m/s
B. 46 m/s
C. 200 m/s
D. 400 m/s

151. The splitting of white light into its constituent colours by a prism is called:

A. Interference
B. Diffraction
C. Dispersion
D. Polarization

152. An object placed at the centre of curvature of a concave mirror forms an image that is:

A. Virtual, erect and magnified
B. Real, inverted and the same size
C. Real, erect and diminished
D. Virtual and inverted

153. The power of a lens with focal length +0.5 m is:

A. −2 D
B. +2 D
C. +0.5 D
D. −0.5 D

154. Total internal reflection occurs when light travels:

A. From a rarer to a denser medium at any angle
B. From a denser to a rarer medium at an angle greater than the critical angle
C. Only through a vacuum
D. At normal incidence

155. The SI unit of electric charge is:

A. Ampere
B. Coulomb
C. Volt
D. Ohm

156. Two 6 Ω resistors connected in parallel have an equivalent resistance of:

A. 12 Ω
B. 6 Ω
C. 3 Ω
D. 1 Ω

157. A 12 V battery drives a current of 2 A through a resistor. Its resistance is:

A. 4 Ω
B. 6 Ω
C. 10 Ω
D. 24 Ω

158. Electrical power dissipated in a resistor can be calculated using:

A. P=VIP=VIP=VI
B. P=V/IP=V/IP=V/I only
C. P=IRP=IRP=IR
D. P=R/VP=R/VP=R/V

159. The magnetic field around a long, straight current-carrying wire consists of:

A. Radial lines
B. Concentric circles
C. Parallel lines only
D. Ellipses

160. Which law states that induced current opposes the change that produces it?

A. Snell's law
B. Lenz's law
C. Hooke's law
D. Pascal's law

161. A transformer operates on the principle of:

A. Electrolysis
B. Mutual induction
C. Photoelectric effect
D. Thermionic emission

162. Which material is widely used as a semiconductor?

A. Copper
B. Silicon
C. Mica
D. Aluminium

163. In a p-n junction diode under forward bias, the depletion-layer width generally:

A. Increases greatly
B. Decreases
C. Remains infinite
D. Never changes

164. The photoelectric effect provides evidence for the:

A. Wave-only nature of light
B. Particle nature of light
C. Sound nature of light
D. Absence of photons

165. The half-life of a radioactive sample is the time required for:

A. All nuclei to decay
B. Half the original undecayed nuclei to remain
C. Activity to double
D. The mass to become zero

166. The charge of an alpha particle is:

A. −e-e−e
B. +e+e+e
C. +2e+2e+2e
D. −2e-2e−2e

167. Which electromagnetic radiation has the shortest wavelength?

A. Radio waves
B. Microwaves
C. Visible light
D. Gamma rays

168. The de Broglie wavelength of a particle is inversely proportional to its:

A. Charge
B. Momentum
C. Electric potential only
D. Temperature only

169. The energy of a photon is given by:

A. hc/λhc/\lambdahc/λ
B. hλ/ch\lambda/chλ/c
C. λ/hc\lambda/hcλ/hc
D. mc2λmc^2\lambdamc2λ

170. A convex lens forms a virtual, erect and magnified image when the object is:

A. Beyond 2F
B. At 2F
C. Between the lens and its focal point
D. At infinity

171. The magnetic force on a charged particle moving parallel to a uniform magnetic field is:

A. Maximum
B. Zero
C. Always qvBqvBqvB
D. Infinite

172. Which of the following is a scalar quantity?

A. Displacement
B. Acceleration
C. Work
D. Force

173. A 5 kg object has momentum of 20 kg m/s. Its speed is:

A. 2 m/s
B. 4 m/s
C. 10 m/s
D. 100 m/s

174. The coefficient of friction is:

A. Measured in newtons
B. Measured in pascals
C. Dimensionless
D. Measured in joules

175. The efficiency of a machine is:

A. Input energy divided by output energy × 100%
B. Useful output energy divided by input energy × 100%
C. Always 100%
D. Output power plus input power

176. Which lens is used to correct myopia?

A. Convex lens
B. Concave lens
C. Cylindrical lens in every case
D. No lens can correct it

177. In a series circuit, the current through each resistor is:

A. Different through every resistor
B. The same
C. Always zero
D. Proportional to its resistance

178. According to Coulomb's law, the force between two point charges varies with separation rrr as:

A. rrr
B. 1/r1/r1/r
C. 1/r21/r^21/r2
D. r2r^2r2

179. Which device converts mechanical energy into electrical energy using electromagnetic induction?

A. Electric motor
B. Generator
C. Transformer
D. Rectifier

180. The approximate acceleration due to gravity near Earth's surface is:

A. 0.98 m/s^2
B. 9.8 m/s^2
C. 98 m/s^2
D. 980 m/s^2

MAT
20 MCQs | 4 options each
Questions

181. Find the next number: 3, 7, 15, 31, 63, __

A. 95
B. 126
C. 127
D. 129

182. Choose the odd one out.

A. Square
B. Triangle
C. Circle
D. Cube

183. If NURSE is coded as OVSTF by shifting each letter one position forward, how is CARE coded?

A. DBSF
B. DBQD
C. EBSF
D. DASF

184. A is taller than B, and B is taller than C. Who is the shortest?

A. A
B. B
C. C
D. Cannot be determined

185. Complete the analogy: Book : Read :: Food : __

A. Cook
B. Eat
C. Buy
D. Serve

186. If today is Tuesday, what day will it be 17 days later?

A. Thursday
B. Friday
C. Saturday
D. Sunday

187. Find the missing number: 2, 6, 12, 20, 30, __

A. 36
B. 40
C. 42
D. 44

188. Which word does not belong?

A. Rose
B. Lily
C. Tulip
D. Carrot

189. Five workers complete a task in 12 days. At the same rate, how many days will 10 workers take?

A. 3 days
B. 6 days
C. 12 days
D. 24 days

190. A clock shows 3:00. What is the smaller angle between its hands?

A. 0°
B. 45°
C. 90°
D. 180°

191. Arrange these stages of human life in the correct order:

1. **Adult**
2. **Infant**
3. **Adolescent**
4. **Child**

A. 2, 4, 3, 1
B. 4, 2, 3, 1
C. 2, 3, 4, 1
D. 1, 3, 4, 2

192. If all roses are flowers and some flowers fade quickly, which conclusion must be true?

A. All roses fade quickly
B. Some roses fade quickly
C. All roses are flowers
D. No flowers are roses

193. Find the next letter: A, C, F, J, O, __

A. S
B. T
C. U
D. V

194. A person faces north and turns right twice. Which direction are they facing?

A. East
B. West
C. South
D. North

195. If 8 pens cost Rs. 120, what is the cost of 5 pens at the same rate?

A. Rs. 60
B. Rs. 70
C. Rs. 75
D. Rs. 80

196. Which number is different from the others?

A. 16
B. 25
C. 36
D. 45

197. Complete the analogy: Thermometer : Temperature :: Barometer : __

A. Speed
B. Pressure
C. Humidity
D. Rainfall

198. If CAT is written as 3120 using alphabet positions (C = 3, A = 1, T = 20), how is DOG written?

A. 4157
B. 4158
C. 4617
D. 4517

199. A bag contains 4 red balls and 6 blue balls. What is the probability of randomly drawing a red ball?

A. 1/5
B. 2/5
C. 3/5
D. 4/5

200. Choose the pair with the same relationship as Doctor : Hospital.

A. Teacher : School
B. Book : Page
C. River : Water
D. Car : Road

__Best Wishes__