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CEE Based Model Questions (Set-B)

**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. Darwin's theory of natural selection primarily explains:

- A. Inheritance of acquired characters
- B. Differential survival and reproduction
- C. Use and disuse of organs
- D. Spontaneous generation

2. The forelimbs of a whale, bat and human are examples of:

- A. Analogous organs
- B. Vestigial organs only
- C. Homologous organs
- D. Artificial structures

3. Which evidence most directly supports evolution through transitional forms?

- A. Fossil record
- B. Blood pressure
- C. Osmosis
- D. Enzyme inhibition

4. A defining feature of mammals is the presence of:

- A. Feathers
- B. Mammary glands
- C. Gills throughout life
- D. A water vascular system

5. Cnidocytes are characteristic of:

- A. Porifera
- B. Cnidaria
- C. Annelida
- D. Mollusca

6. The body of an insect is typically divided into:

- A. Head, thorax and abdomen
- B. Cephalothorax and tail
- C. Head and trunk only
- D. Prothorax and abdomen only

7. The exoskeleton of arthropods is mainly made of:

- A. Cellulose
- B. Chitin
- C. Keratin
- D. Calcium pectate

8. Which animal is a cephalochordate?

- A. Herdmania
- B. Amphioxus
- C. Petromyzon
- D. Scoliodon

9. The excretory organs of insects are:

- A. Nephridia
- B. Flame cells
- C. Malpighian tubules
- D. Green glands

10. The larva of a frog is called:

- A. Planula
- B. Tadpole
- C. Nauplius
- D. Trochophore

11. The body cavity completely lined by mesoderm is a:

- A. Pseudocoel
- B. Coelom
- C. Blastocoel only
- D. Haemocoel in all animals

12. The main nitrogenous waste in adult humans is:

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

13. Bile is produced by the:

- A. Gallbladder
- B. Liver
- C. Pancreas
- D. Duodenum

14. Pepsin functions optimally in a strongly acidic environment created by:

- A. Bile salts
- B. Hydrochloric acid
- C. Sodium bicarbonate
- D. Salivary amylase

15. The enzyme that begins starch digestion in the mouth is:

- A. Pepsin
- B. Trypsin
- C. Salivary amylase
- D. Lipase

16. Most carbon dioxide in blood is transported as:

- A. Dissolved CO₂ only
- B. Carbaminohaemoglobin only
- C. Bicarbonate ions
- D. Carbon monoxide

17. The respiratory surface of human lungs is formed mainly by:

- A. Bronchi
- B. Alveoli
- C. Larynx
- D. Pleura

18. During inhalation, the diaphragm:

- A. Relaxes and domes upward
- B. Contracts and flattens
- C. Stops moving
- D. Pushes air out directly

19. The vitamin essential for normal blood clotting is:

- A. Vitamin A
- B. Vitamin C
- C. Vitamin D
- D. Vitamin K

20. The mineral required in the greatest amount for haemoglobin formation is:

- A. Iron
- B. Iodine
- C. Fluorine
- D. Sodium

21. The hormone that stimulates red blood cell production is:

- A. Erythropoietin
- B. Calcitonin
- C. Secretin
- D. Melatonin

22. The AV valves prevent backflow from:

- A. Arteries into ventricles
- B. Ventricles into atria
- C. Veins into capillaries
- D. Aorta into pulmonary artery

23. The natural anticoagulant commonly found in mast cells is:

- A. Heparin
- B. Pepsin
- C. Renin
- D. Insulin

24. The blood vessel carrying oxygenated blood from lungs to heart is the:

- A. Pulmonary artery
- B. Pulmonary vein
- C. Vena cava
- D. Hepatic portal vein

25. The main site of glucose reabsorption in the nephron is the:

- A. Proximal convoluted tubule
- B. Descending loop only
- C. Collecting duct
- D. Renal pelvis

26. The counter-current mechanism helps concentrate urine mainly through the:

- A. Loop of Henle and vasa recta
- B. Glomerulus alone
- C. Ureter
- D. Renal capsule

27. The hormone that raises blood calcium level is:

- A. Calcitonin
- B. Parathyroid hormone
- C. Insulin
- D. Aldosterone

28. Thyroxine synthesis requires:

- A. Iron
- B. Iodine
- C. Calcium
- D. Potassium

29. The part of the eye with the highest density of cones is the:

- A. Blind spot
- B. Fovea centralis
- C. Optic nerve
- D. Ciliary body

30. The neurotransmitter released at the skeletal neuromuscular junction is:

- A. Acetylcholine
- B. Dopamine only
- C. Thyroxine
- D. Insulin

31. The functional unit of skeletal muscle contraction is the:

- A. Sarcomere
- B. Neuron
- C. Nephron
- D. Alveolus

32. The bone cells responsible for bone resorption are:

- A. Osteoblasts
- B. Osteoclasts
- C. Osteocytes only
- D. Chondroblasts

33. The first menstrual cycle is called:

- A. Menopause
- B. Menarche
- C. Ovulation
- D. Gestation

34. The placenta enables exchange between maternal and fetal blood while normally:

- A. Mixing the two blood supplies freely
- B. Keeping the circulations separate
- C. Stopping oxygen transfer
- D. Producing sperm

35. The hormone that maintains the uterine lining in early pregnancy is mainly:

- A. Progesterone
- B. Oxytocin
- C. FSH
- D. Adrenaline

36. A disease transmitted by the bite of an infected female sandfly is:

- A. Kala-azar
- B. Dengue
- C. Cholera
- D. Tetanus

37. Hepatitis B primarily affects the:

- A. Kidney
- B. Liver
- C. Pancreas
- D. Lung

38. The BCG vaccine is used mainly to protect against severe forms of:

- A. Tuberculosis
- B. Measles
- C. Polio
- D. Tetanus

39. The study of distribution of organisms in geographical areas is:

- A. Ecology only
- B. Biogeography
- C. Histology
- D. Ethology

40. A population's carrying capacity is the:

- A. Maximum sustainable population size in an environment
- B. Number of species in the world
- C. Birth rate only
- D. Total number of predators

Set 2: Botany

40 MCQs | 4 options each

Questions

41. The fluid mosaic model describes the structure of the:

- A. Cell wall
- B. Plasma membrane
- C. Nucleolus
- D. Middle lamella

42. Ribosomes are the sites of:

- A. Lipid storage
- B. Protein synthesis
- C. ATP storage
- D. DNA packaging only

43. The organelle containing hydrolytic digestive enzymes is the:

- A. Lysosome
- B. Chloroplast
- C. Centrosome
- D. Nucleolus

44. A prokaryotic cell lacks a:

- A. Plasma membrane
- B. Ribosome
- C. Membrane-bound nucleus
- D. Cytoplasm

45. The plant tissue responsible for upward water transport is mainly:

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

46. Casparian strips occur in the:

- A. Endodermis of roots
- B. Leaf cuticle
- C. Pollen wall
- D. Phloem sieve plate

47. The main function of root hairs is to increase:

- A. Photosynthesis
- B. Absorption surface
- C. Seed dispersal
- D. Pollen production

48. A typical dicot stem vascular bundle is:

- A. Radial and closed
- B. Conjoint, collateral and open
- C. Scattered and closed
- D. Without phloem

49. The tissue that forms the outer protective covering of young plant organs is:

- A. Epidermis
- B. Xylem
- C. Cambium
- D. Pith

50. The main function of lenticels is:

- A. Seed production
- B. Gas exchange in woody stems
- C. Water absorption from soil
- D. Sugar transport

51. In C₃ plants, the first stable product of CO₂ fixation is usually:

- A. 3-PGA
- B. Oxaloacetate
- C. RuBP
- D. Glucose

52. Photorespiration is favoured by:

- A. Low temperature and high CO₂
- B. High temperature and low CO₂
- C. Darkness only
- D. High oxygen absence

53. The immediate source of energy for most cellular work is:

- A. DNA
- B. ATP
- C. Cellulose
- D. NADP⁺

54. The plant hormone that promotes cell division is:

- A. Cytokinin
- B. Absciscic acid
- C. Ethylene only
- D. Jasmonate only

55. A plant bending toward light demonstrates:

- A. Geotropism
- B. Phototropism
- C. Hydrotropism
- D. Thigmonasty

56. Water movement through a semipermeable membrane from higher to lower water potential is:

- A. Diffusion of solute
- B. Osmosis
- C. Active transport
- D. Translocation

57. The cohesion-tension theory explains:

- A. Sugar synthesis
- B. Ascent of sap
- C. Pollen germination
- D. Seed dormancy

58. The plant structure that develops into a seed after fertilization is the:

- A. Ovary wall
- B. Ovule
- C. Stigma
- D. Anther

59. The ovary of a flower develops into the:

- A. Seed coat
- B. Fruit
- C. Embryo
- D. Pollen grain

60. In a typical angiosperm embryo sac, the egg apparatus consists of:

- A. One egg and two synergids
- B. Three antipodals
- C. Two polar nuclei only
- D. Eight eggs

61. Pollen grains are produced in the:

- A. Stigma
- B. Anther
- C. Ovary
- D. Style

62. The main role of endosperm in seeds is to:

- A. Form the pollen tube
- B. Provide nourishment to embryo
- C. Become the seed coat
- D. Absorb minerals from soil only

63. A fruit formed without fertilization is called:

- A. Apomixis
- B. Parthenocarpic fruit
- C. Aggregate fruit only
- D. Drupe

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

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

65. The tissue culture technique is based on plant cell:

- A. Totipotency
- B. Mutation only
- C. Respiration only
- D. Plasmolysis

66. The bacterium commonly used to introduce genes into plants is:

- A. Agrobacterium tumefaciens
- B. Lactobacillus bulgaricus
- C. Vibrio cholerae
- D. Clostridium tetani

67. Rhizobium benefits leguminous plants by:

- A. Fixing atmospheric nitrogen
- B. Producing cellulose
- C. Destroying root hairs
- D. Releasing oxygen in darkness

68. Mycorrhiza is an association between roots and:

- A. Fungi
- B. Viruses
- C. Insects
- D. Algae only

69. The primary producer in a pond ecosystem is usually:

- A. Zooplankton
- B. Phytoplankton
- C. Small fish
- D. Frog

70. A species restricted to a particular geographic region is:

- A. Cosmopolitan
- B. Endemic
- C. Invasive
- D. Migratory

71. The process by which nitrogen gas becomes biologically available ammonia is:

- A. Denitrification
- B. Nitrogen fixation
- C. Nitrification
- D. Ammonification only

72. The pioneer organisms on bare rock during primary succession are often:

- A. Large trees
- B. Lichens
- C. Fish
- D. Mammals

73. A plant adapted to dry conditions is called a:

- A. Hydrophyte
- B. Xerophyte
- C. Mesophyte
- D. Halophyte only

74. The botanical name is written using:

- A. A single vernacular word
- B. Binomial nomenclature
- C. Only a family name
- D. A number code

75. The main component of fungal cell walls is:

- A. Cellulose only
- B. Chitin
- C. Peptidoglycan
- D. Lignin

76. The bacterial cell wall commonly contains:

- A. Peptidoglycan
- B. Chlorophyll
- C. Chitin
- D. Keratin

77. In bryophytes, the sporophyte is generally:

- A. Fully independent and dominant
- B. Dependent on the gametophyte
- C. A seed-bearing plant
- D. Without a capsule

78. The plant group with seeds but no flowers or fruits includes:

- A. Mosses
- B. Gymnosperms
- C. Algae
- D. Fungi

79. A monohybrid cross of two heterozygotes with complete dominance typically gives a phenotypic ratio of:

- A. 1:1
- B. 2:1
- C. 3:1
- D. 9:3:3:1

80. A mutation involving replacement of one nucleotide by another is a:

- A. Point mutation
- B. Polyploidy
- C. Translocation only
- D. Crossing over

Chemistry

50 MCQs | 4 options each

Questions

81. The number of significant figures in 0.00450 is:

- A. 2
- B. 3
- C. 4
- D. 5

82. The molality of a solution is the number of moles of solute per:

- A. Litre of solution
- B. Kilogram of solvent
- C. Kilogram of solution
- D. Litre of solvent

83. For an ideal gas at constant pressure, volume is directly proportional to:

- A. Absolute temperature
- B. Inverse temperature
- C. Molar mass
- D. Density only

84. The pH of a neutral aqueous solution at 25°C is approximately:

- A. 0
- B. 5
- C. 7
- D. 14

85. A strong acid in dilute aqueous solution:

- A. Ionizes almost completely
- B. Does not ionize
- C. Always has pH 7
- D. Cannot conduct electricity

86. For an exothermic reaction, increasing temperature generally shifts equilibrium toward:

- A. Products
- B. Reactants
- C. No side in all cases
- D. More catalyst

87. The rate of a chemical reaction is commonly increased by:

- A. Lowering temperature always
- B. Increasing effective collision frequency
- C. Removing all reactants
- D. Adding inert solid in every case

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

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

89. The standard electrode potential of the standard hydrogen electrode is defined as:

- A. +1.00 V
- B. -1.00 V
- C. 0.00 V
- D. +0.76 V

90. In an electrochemical cell, oxidation occurs at the:

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

91. The SI unit of electric charge is the:

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

92. The shape of an NH_n molecule is:

- A. Trigonal planar
- B. Trigonal pyramidal
- C. Linear
- D. Octahedral

93. The bond angle in a linear molecule with sp hybridization is:

- A. 90°
- B. 109.5°
- C. 120°
- D. 180°

94. Which molecule has a permanent dipole moment?

- A. CO_n
- B. CH_n
- C. H_nO
- D. BF_n

95. The strongest intermolecular attraction between ethanol molecules is:

- A. Hydrogen bonding
- B. Metallic bonding
- C. Ionic bonding
- D. Nuclear force

96. The oxidation state of sulfur in H_2SO_4 is:

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

97. The oxidation state of nitrogen in NH_3 is:

- A. -3
- B. +3
- C. +5
- D. 0

98. Which element is an alkali metal?

- A. Calcium
- B. Sodium
- C. Aluminium
- D. Chlorine

99. Across a period, metallic character generally:

- A. Increases
- B. Decreases
- C. Remains identical
- D. Becomes unrelated to atomic structure

100. The principal ore of aluminium is:

- A. Haematite
- B. Bauxite
- C. Galena
- D. Cinnabar

101. The gas evolved at the cathode during electrolysis of aqueous NaCl is generally:

- A. Chlorine
- B. Hydrogen
- C. Oxygen
- D. Nitrogen

102. The chief ore of iron is:

- A. Bauxite
- B. Haematite
- C. Malachite
- D. Calamine

103. Temporary hardness of water is mainly due to bicarbonates of:

- A. Sodium and potassium
- B. Calcium and magnesium
- C. Iron and copper only
- D. Silver and gold

104. The chemical formula of washing soda is:

- A. NaHCO_3
- B. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
- C. CaCO_3
- D. NaOH

105. The IUPAC name of $\text{CH}_3\text{CH}_2\text{OH}$ is:

- A. Methanol
- B. Ethanol
- C. Ethanal
- D. Ethanoic acid

106. Benzene typically undergoes electrophilic substitution because it:

- A. Is fully saturated
- B. Retains aromatic stability
- C. Has no pi electrons
- D. Contains an ionic bond

107. The reagent used to test for unsaturation in an organic compound is often:

- A. Bromine water
- B. Limewater
- C. Fehling solution only
- D. Nessler reagent

108. The IUPAC name of CH_3CHO is:

- A. Ethanol
- B. Ethanal
- C. Ethanoic acid
- D. Propanone

109. Which compound is a primary amine?

- A. CH_3NH_2
- B. CH_3CONH_2
- C. CH_3NO_2
- D. CH_3CN

110. The polymer formed from ethene is:

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

111. The monomer used to manufacture PVC is:

- A. Ethene
- B. Vinyl chloride
- C. Styrene
- D. Tetrafluoroethene

112. Soap cleans oily dirt mainly by forming:

- A. Crystals
- B. Micelles
- C. Ionic lattices only
- D. Metallic films

113. The main acid present in vinegar is:

- A. Citric acid
- B. Acetic acid
- C. Oxalic acid
- D. Lactic acid

114. A primary standard should be:

- A. Highly impure
- B. Stable and high purity
- C. Very volatile
- D. Impossible to weigh

115. The endpoint of an acid-base titration is commonly detected using:

- A. An indicator colour change
- B. A magnet
- C. A thermometer only
- D. A barometer

116. Chromatography separates substances mainly based on differences in:

- A. Nuclear charge
- B. Distribution between stationary and mobile phases
- C. Atomic number only
- D. Melting point only

117. The functional group of an ether is:

- A. $R-O-R'$
- B. $R-COOH$
- C. $R-CHO$
- D. $R-NH_n$

118. The major product of complete combustion of a hydrocarbon is:

- A. CO and soot only
- B. CO_n and H_nO
- C. H_n and O_n
- D. Carbon and nitrogen

119. A solution that turns red litmus blue is:

- A. Acidic
- B. Basic
- C. Neutral always
- D. A salt only

120. The common oxidation state of alkaline-earth metals is:

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

121. The catalyst used in the Haber process is finely divided:

- A. Iron
- B. Nickel
- C. Platinum
- D. Copper

122. The main greenhouse gas among the following is:

- A. O_n
- B. CO_n
- C. Ar
- D. Ne

123. The acid responsible for acid rain is mainly formed from atmospheric:

- A. SO_n and nitrogen oxides
- B. O_n and helium
- C. Hydrogen and neon
- D. Methane only

124. Which of the following is a colligative property?

- A. Colour
- B. Osmotic pressure
- C. Odour
- D. Viscosity only

125. For a dilute solution, relative lowering of vapour pressure depends on the:

- A. Nature of container
- B. Mole fraction of solute
- C. Colour of solute
- D. Shape of solute particles

126. The hybridization of carbon atoms in ethyne is:

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

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

- A. Tollens' reagent
- B. Sodium chloride
- C. Dilute NaOH alone
- D. Bromine water only

128. A buffer made from a weak acid and its salt works best when:

- A. pH is close to pK_a
- B. pH is always 14
- C. No conjugate base is present
- D. The acid is completely absent

129. The rate of diffusion of a gas is inversely proportional to the square root of its:

- A. Pressure
- B. Molar mass
- C. Temperature
- D. Volume

130. Which allotrope of carbon conducts electricity well?

- A. Diamond
- B. Graphite
- C. Fullerene only
- D. Amorphous sugar

Physics

50 MCQs | 4 options each

Questions

131. The dimensional formula of work is:

- A. $MLTn^2$
- B. ML^2Tn^2
- C. ML^2Tn^3
- D. $MnLTn^1$

132. A body moving with constant speed in a circle has:

- A. Zero acceleration
- B. Constant velocity
- C. Centripetal acceleration
- D. No net force

133. The impulse delivered by a force equals the change in:

- A. Kinetic energy
- B. Momentum
- C. Power
- D. Displacement

134. The coefficient of friction is:

- A. Measured in newtons
- B. Dimensionless
- C. Measured in joules
- D. Always greater than one

135. For a body in equilibrium, the net force is:

- A. Maximum
- B. Zero
- C. Equal to its weight always
- D. Infinite

136. The centre of mass of a uniform circular ring lies:

- A. On the circumference
- B. At its centre
- C. Outside the ring
- D. At any random point

137. The gravitational potential energy near Earth's surface is:

- A. GMm/r
- B. mgh
- C. $\frac{1}{2}mv^2$
- D. F/t

138. The orbital speed of a satellite in a circular orbit increases when orbital radius:

- A. Increases
- B. Decreases
- C. Becomes infinite
- D. Has no effect

139. Bernoulli's principle relates pressure to fluid speed for ideal steady flow; where speed increases, static pressure generally:

- A. Increases
- B. Decreases
- C. Stays fixed in all cases
- D. Becomes zero

140. The SI unit of surface tension is:

- A. $N\ m^{-1}$
- B. $N\ m$
- C. $Pa\ m^2$
- D. $J\ s$

141. Heat transfer through a vacuum occurs by:

- A. Conduction only
- B. Convection only
- C. Radiation
- D. All three equally

142. During melting of a pure solid at its melting point, supplied heat mainly increases:

- A. Temperature
- B. Latent internal energy
- C. Mass
- D. Pressure necessarily

143. The efficiency of a real heat engine is always:

- A. Greater than 100%
- B. Equal to Carnot efficiency
- C. Less than the corresponding Carnot limit
- D. Independent of heat input

144. For an ideal gas, internal energy depends only on:

- A. Pressure only
- B. Volume only
- C. Temperature
- D. Container shape

145. The rms speed of gas molecules increases with:

- A. Lower absolute temperature
- B. Higher absolute temperature
- C. Higher molar mass at fixed temperature
- D. Lower kinetic energy

146. The frequency of a wave is the reciprocal of its:

- A. Amplitude
- B. Period
- C. Wavelength
- D. Speed

147. The phenomenon responsible for the blue colour of the sky is mainly:

- A. Diffraction
- B. Rayleigh scattering
- C. Total internal reflection
- D. Polarization only

148. A convex mirror always forms an image that is:

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

149. The critical angle for a medium relative to air becomes smaller when its refractive index:

- A. Increases
- B. Decreases
- C. Equals zero
- D. Has no relation

150. The resolving power of a microscope improves when the wavelength used is:

- A. Longer
- B. Shorter
- C. Infinite
- D. Unrelated to wavelength

151. The SI unit of magnetic flux is:

- A. Tesla
- B. Weber
- C. Henry
- D. Ampere

152. A charged particle moving parallel to a uniform magnetic field experiences magnetic force:

- A. qvB
- B. $qvB/2$
- C. Zero
- D. Infinite

153. The resistance of a metallic conductor generally increases with temperature because:

- A. Carrier charge vanishes
- B. Lattice vibrations increase
- C. Its length always becomes zero
- D. Electrons become protons

154. The equivalent resistance of three equal resistors R in parallel is:

- A. $3R$
- B. R
- C. $R/3$
- D. $R/9$

155. The electrical energy consumed by a 100 W device in 2 hours is:

- A. 0.2 kWh
- B. 2 kWh
- C. 20 kWh
- D. 200 kWh

156. A fuse wire should have:

- A. High melting point and low resistance
- B. Low melting point and suitable resistance
- C. Zero resistance
- D. Very high tensile strength only

157. The drift velocity of electrons in a metal increases when:

- A. Electric field increases
- B. Temperature is always zero
- C. The wire is disconnected
- D. Charge carriers disappear

158. A transformer cannot operate with steady DC because:

- A. DC has too high a frequency
- B. Changing magnetic flux is absent after switching
- C. Copper cannot conduct DC
- D. It violates charge conservation

159. The electric field inside a conductor in electrostatic equilibrium is:

- A. Infinite
- B. Zero
- C. Equal to surface charge
- D. Always 1 V/m

160. The capacitance of a parallel-plate capacitor increases if plate separation:

- A. Increases
- B. Decreases
- C. Becomes infinite
- D. Has no effect

161. The energy of a photon is:

- A. $E = mc$
- B. $E = hf$
- C. $E = h/f$
- D. $E = f/h$

162. The de Broglie wavelength of a particle is:

- A. $\lambda = p/h$
- B. $\lambda = h/p$
- C. $\lambda = hp$
- D. $\lambda = h + p$

163. In the photoelectric effect, emission occurs only when light frequency is:

- A. Below threshold
- B. At or above threshold
- C. Always zero
- D. Independent of work function

164. The half-life of a radioactive isotope is the time for its undecayed nuclei to fall to:

- A. One-quarter
- B. One-half
- C. Zero instantly
- D. Double

165. An alpha particle is the nucleus of:

- A. Hydrogen
- B. Helium-4
- C. Carbon-12
- D. Deuterium

166. The charge of a beta-minus particle is:

- A. $+e$
- B. $-e$
- C. Zero
- D. $+2e$

167. Nuclear fission is the process in which a heavy nucleus:

- A. Combines with another light nucleus
- B. Splits into lighter nuclei
- C. Emits visible light only
- D. Loses all protons

168. The main source of energy in the Sun is:

- A. Chemical combustion
- B. Nuclear fusion
- C. Nuclear fission
- D. Gravitational friction only

169. A semiconductor's conductivity generally increases with temperature because:

- A. Carrier concentration increases
- B. Its band gap becomes infinite
- C. All atoms become insulators
- D. Its electrons stop moving

170. The logic gate whose output is 1 only when both inputs are 1 is:

- A. OR
- B. AND
- C. NOT
- D. NOR

171. The output of a NOT gate for input 1 is:

- A. 1
- B. 0
- C. Undefined
- D. Both 0 and 1

172. The work function of a metal is the minimum energy needed to:

- A. Melt it
- B. Remove an electron from its surface
- C. Split its nucleus
- D. Increase its mass

173. The phenomenon confirming wave nature of electrons is:

- A. Compton scattering only
- B. Electron diffraction
- C. Nuclear fission
- D. Thermionic emission

174. In an X-ray tube, X-rays are produced when fast electrons:

- A. Pass through water
- B. Decelerate rapidly at a target
- C. Combine with neutrons
- D. Move in a straight vacuum without collision

175. The SI unit of radioactivity is:

- A. Gray
- B. Sievert
- C. Becquerel
- D. Tesla

176. A p-n junction diode conducts strongly in:

- A. Reverse bias
- B. Forward bias
- C. Both directions equally
- D. No bias only

177. The output of an OR gate is 0 when:

- A. Both inputs are 0
- B. Both inputs are 1
- C. Either input is 1
- D. Only one input is 1

178. The energy released in a nuclear reaction is related to mass defect by:

- A. $E = mc^2$
- B. $E = mv$
- C. $E = mgh$
- D. $E = IR$

179. The SI unit of inductance is:

- A. Tesla
- B. Henry
- C. Weber
- D. Farad

180. In a series LCR circuit at resonance, the impedance is:

- A. Maximum and purely capacitive
- B. Minimum and equal to resistance
- C. Infinite
- D. Always zero

MAT

20 MCQs | 4 options each

Questions

181. Choose the closest meaning of 'concise':

- A. Brief
- B. Confusing
- C. Careless
- D. Length

182. Choose the word that does not belong:

- A. Triangle
- B. Square
- C. Circle
- D. Rectangle

183. If every nurse is trained and Mira is a nurse, which follows?

- A. Mira is trained
- B. All trained people are nurses
- C. Mira is a doctor
- D. No nurse is trained

184. Complete the sequence: 7, 14, 28, 56, __

- A. 84
- B. 98
- C. 112
- D. 120

185. Complete the sequence: 1, 4, 9, 16, 25, __

- A. 30
- B. 32
- C. 36
- D. 49

186. If BOOK is coded as CPPL by shifting each letter forward one, PAGE is coded as:

- A. QBHF
- B. QBGF
- C. PBHF
- D. QAHF

187. A person walks 4 m east, 4 m north, then 4 m west. Where are they relative to the start?

- A. 4 m north
- B. 4 m south
- C. 4 m east
- D. At the start

188. If today is Wednesday, what day will it be 10 days later?

- A. Friday
- B. Saturday
- C. Sunday
- D. Monday

189. A shirt marked Rs. 1,000 is discounted by 15%. Its sale price is:

- A. Rs. 750
- B. Rs. 800
- C. Rs. 850
- D. Rs. 900

190. If 3 pens cost Rs. 45, what is the cost of 7 pens at the same rate?

- A. Rs. 90
- B. Rs. 95
- C. Rs. 105
- D. Rs. 115

191. Find the missing number: 2, 5, 10, 17, 26, __

- A. 35
- B. 36
- C. 37
- D. 38

192. A is taller than B; B is taller than C. Who is shortest?

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

193. Which pair has the same relationship as doctor : hospital?

- A. Teacher : school
- B. Book : page
- C. Pen : ink
- D. Road : car

194. A cube is painted on all faces and cut into 27 equal smaller cubes. How many small cubes have paint on exactly three faces?

- A. 4
- B. 6
- C. 8
- D. 12

195. If the letters of CARE are rearranged alphabetically, the middle two letters are:

- A. A and C
- B. C and E
- C. A and R
- D. C and R

196. A clock gains 5 minutes every hour. How much does it gain in 6 hours?

- A. 15 minutes
- B. 20 minutes
- C. 30 minutes
- D. 35 minutes

197. A number divided by 4 gives 9. What is the number?

- A. 13
- B. 27
- C. 36
- D. 45

198. Select the next letter: B, E, I, N, T, __

- A. X
- B. Y
- C. Z
- D. A

199. A map scale is 1 cm : 5 km. Two towns are 7 cm apart on the map. Actual distance is:

- A. 12 km
- B. 25 km
- C. 30 km
- D. 35 km

200. In a group of 30 students, 18 are girls. What percentage are boys?

- A. 30%
- B. 35%
- C. 40%
- D. 60%

__Best Wishes__