

BIOLOGY

1. Which of the following belongs to chordates
 - A. Spider
 - B. Earthworm
 - C. Trout Fish
 - D. Star Fish
2. Which of the following statement is incorrect regarding rate of enzymatic action
 - A. Increase in enzyme concentration increases the rate
 - B. Increase in enzyme concentration reduces the rate
 - C. All enzymes work at their maximum rate at optimum temperature
 - D. All enzymes work at their maximum rate at optimum pH
3. Induced fit model of enzyme activity suggests that an enzyme
 - A. Cannot modify its active sites
 - B. Can bind to a single substrate
 - C. Can catalyze related reaction
 - D. Usually belongs to non-regulatory enzyme
4. Chromosomal abnormality in Turner syndrome is represented by?
 - A. XXX
 - B. XYY
 - C. XO
 - D. XXY
5. The change in frequency of alleles at a locus that occurs by chance is known as:
 - A. Mutation
 - B. Genetic Drift
 - C. Non Random mating
 - D. Speciation
6. Identify the correct pair of vestigial organs:
 - A. Ear Muscles & Vermiform appendix
 - B. Heart & Liver
 - C. Ear Muscles & Liver
 - D. Vermiform appendix & Heart
7. Which of the following increases variation within a gene pool?
 - A. Chromosome inversion
 - B. Crossing over
 - C. Gene mutation
 - D. Random fusion of gametes
8. Which of the following statements about natural selection is not true?
 - A. It affects variations that are heritable
 - B. It is selected by a breeder
 - C. It can improve the adaptation of species
 - D. It is regional in nature
9. The formula calculating the frequency of genotypes and alleles in a population gene pool is known as:
 - A. Hardy-Weinberg Equation
 - B. Lamarck Equation
 - C. Darwin Equation
 - D. James Hutton Equation
10. The idea of inheritance of acquired characteristics was presented by:
 - A. Jean Baptist Lamarck
 - B. Charles Darwin
 - C. Thomas Malthus
 - D. Alfred Wallace
11. According to endosymbiosis theory, flagella may have derived by the ingestion of prokaryotes similar to
 - A. Amoeboid prokaryote
 - B. Aerobic bacterium
 - C. Spirochete
 - D. Spirillum
12. Insulin converts glucose into
 - A. Vitamins
 - B. Minerals
 - C. Lipids
 - D. Cortisone
13. About 70% of the carbon dioxide is carried in blood as:
 - A. Carbonate
 - B. Bicarbonate
 - C. Tricarbonate
 - D. Carbonic anhydrase

14. Range of normal total lung capacity in humans is
 A. 5-6 liter
 B. 8-9 liter
 C. 10-11 liter
 D. 12-13 liter
15. Respiration in *Pseudomonas* bacteria is
 A. Aerobic
 B. Anaerobic
 C. Facultative
 D. Microaerophil
16. Autotrophic mode of nutrition in organism depends upon
 A. Saprotrophic mode
 B. Parasitic mode
 C. Photosynthesis mode
 D. Obligate mode
17. Prokaryotic cells lack
 A. Mesosomes
 B. Ribosomes
 C. Storage bodies
 D. Membrane bound organelles
18. Bacterial genome becomes diploid:
 A. After fertilization of gametes
 B. Before spore formation
 C. During binary fission
 D. After binary fission
19. One of the following is CORRECT regarding flagella:
 A. Made up of macrofilaments
 B. Contains centriole
 C. Originates from basal bodies
 D. They are immotile
20. Example of viruses having a polyhedral capsid that is with 252 capsomeres is:
 A. Adenovirus
 B. Tobacco Mosaic Virus
 C. Influenza virus
 D. Bacteriophage
21. The complete, mature & infectious particle of virus is known as:
 A. Genome
 B. Capsomere
 C. Prion
 D. Envelope
22. The causative organism of measles is
 A. Poxivirus
 B. Paparivirus
 C. Picornavirus
 D. Paramyxovirus
23. In the life cycle of a bacteriophage, the lysozymes are required in which of the following steps of infection process?
 A. Genome injection
 B. Penetration
 C. Replication
 D. Adsorption
24. _____ is transmitted through infected blood and hypodermic syringes
 A. HIV
 B. Influenza Virus
 C. Morbilli Virus (Measles)
 D. Vibrio Cholerae (Cholera)
25. In Calvin cycle CO_2 reacts with RuBP to produce _____
 A. 3-PGA
 B. G3P
 C. 6-Carbon unstable intermediate
 D. 1,3 bisphosphoglycerate
26. Which option is correct about a chlorophyll molecule?
 A. Chemical formula $\text{C}_{55}\text{H}_{70}\text{O}_6\text{N}_4\text{Mg}$
 B. Porphyrin ring with nitrogen in centre
 C. Methyl group on second pyrrole ring
 D. Aldehyde group on second pyrrole ring
27. In the journey of electrons from photosystem II to photosystem I plastocyanine is reduced by
 A. Plastoquinone
 B. Cytochrome complex
 C. P_{700}
 D. Primary electron acceptor of PSI
28. Enzyme NADP reductase is responsible for:
 A. Reducing NADP^+
 B. Oxidizing NADP^+
 C. Reducing Ferredoxin
 D. Reducing P_{700}
29. The PS II during light reactions receives electrons from splitting
 A. Water
 B. Plastoquinone
 C. Plastocyanin
 D. Ferredoxin



30. Mono-saccharides have a general formula represented by
 A. $C_n(H_2O)_n$
 B. $C(H_2O)_n$
 C. $C_2(H_2O)_n$
 D. $C^n(H_2O)_n$
31. What is the percentage of H_2O in bone cells?
 A. 70 %
 B. 20 %
 C. 99 %
 D. 60 %
32. When glycerol reacts with fatty acid, which type of chemical bond will form?
 A. Ester Bond
 B. Ether Linkage
 C. Hydrogen Bond
 D. Ionic Bond
33. Polysaccharides in plants are synthesized by the process of
 A. Hydrolysis
 B. Oxidation
 C. Condensation
 D. Glycolysis
34. Which of the following process is involved in breakdown of protein into Amino acids?
 A. Condensation
 B. Hydrolysis
 C. Glycolysis
 D. Fixation
35. The hydrophilic end of phospholipid molecule is polar because of the presence of
 A. Glycerol
 B. Amine group
 C. Fatty Acid
 D. Phosphate group
36. Which monosaccharide will form a gluco pyranose ring in solution?
 A. Fructose
 B. Glucose
 C. Ribose
 D. Deoxyribose
37. Chloroplast are membrane bound bodies containing
 A. Enzymes
 B. Cisternae
 C. Pigment
 D. Cristae
38. Which of the following is the function of Golgi Complex?
 A. Intracellular digestion
 B. Autophagy
 C. Autolysis
 D. Processing of cell secretions
39. The nucleus takes dyes due to the presence of
 A. Chromatin
 B. Lipid
 C. Metal ions
 D. Thylakoids
40. The organelles only found at seeding stage in oil seed plants are
 A. Peroxisomes
 B. Glyoxisomes
 C. Microbodies
 D. Vacuoles
41. The chromosomes was first observed by;
 A. T. H Morgan
 B. Griffith
 C. Walther
 D. Mendel
42. Bone forming cells are
 A. Osteoblasts
 B. Osteocytes
 C. Osteoclasts
 D. Osteons
43. Which of the following is NOT a bone of upper limb?
 A. Humerus
 B. Ulna
 C. Femur
 D. Radius
44. Medulla Oblongata is a part of:
 A. Forebrain
 B. Mid brain
 C. Hind brain
 D. Hippocampus
45. Sarcomere is part of myofibril between:
 A. Two I bands
 B. Two A bands
 C. Two M lines
 D. Two Z lines
46. Thick filaments in skeletal muscles are composed of:
 A. Actin
 B. Myosin
 C. Tropomyosin
 D. Troponin

47. The accumulation of 'lactic acid' in the muscles results in
 A. Extreme fatigue
 B. Muscle contraction
 C. Paralysis
 D. Convulsion
48. Which feature is possessed by smooth muscles?
 A. Voluntary
 B. Branched
 C. Uni-nucleate
 D. Striated appearance
49. Which of the following skeletal disorder is an example of autoimmune disorder?
 A. Sciatica
 B. Spondylosis
 C. Rheumatoid arthritis
 D. Rickets
50. Which of the following is included in paired cranial bones?
 A. Temporal
 B. Occipital
 C. Frontal
 D. Vomer
51. Immediate next stage of spermatogonia differentiation is:
 A. Secondary spermatocyte
 B. Spermatids
 C. Primary spermatocytes
 D. Sperms
52. Posterior lobe of pituitary produce
 A. Antidiuretic Hormone (ADH)
 B. Thyroid Stimulating Hormone (TSH)
 C. Adreno Corticofrotic Hormone (ACH)
 D. Follicle Stimulating Hormone (FSH)
53. In human myelinated fibers nerve impulse travels at _____ meters per second.
 A. 100-120
 B. 130-150
 C. 160-180
 D. 190-210
54. Nissl's granules are groups of
 A. Mesosomes
 B. Lysosomes
 C. Ribosomes
 D. Chromosome
55. During non-conducting state, the neuron membrane is permeable to efflux of
 A. K^+
 B. Na^+
 C. Ca^{+}
 D. Cl^-
56. Which of the following neurotransmitters is lying outside the central nervous system?
 A. Acetylcholine
 B. Endorphins
 C. Dopamine
 D. Gamma - aminobutyric acid
57. Depolarization during conduction of nerve impulse is due to
 A. Inward movement of Na^+
 B. Inward movement of K^+
 C. Outward movement of K^+
 D. Outward movement of Na^+
58. Which of the following is NOT a feature of Autonomic Nervous System?
 A. Regulate response of visceral organs
 B. Regulate response of skeletal muscles
 C. Regulate response of glands
 D. Regulate response of smooth muscles
59. Taste receptor is an example of
 A. Mechano receptors
 B. Nociceptors
 C. Photo receptors
 D. Chemo receptors
60. Main function of the epididymis is to:
 A. Transport sperms
 B. Connect with urethra
 C. Produce semen
 D. Hold the process of spermatogenesis
61. Due to the process of follicle atresia:
 A. Follicles reach maximum size
 B. Follicle degenerates
 C. Graafian follicle ovulates
 D. Follicle starts to mature
62. Corpus luteum during female reproductive cycle produces
 A. Testosterone
 B. Follicle stimulating hormone
 C. Luteinizing Hormone
 D. Progesterone
63. Fluid secreted by sertoli cells provides liquid medium, protection and nourishment to:
 A. Oocyte
 B. Sperms
 C. Polar body
 D. Spermatogonia
64. Which one of the following hormone is responsible for the labor pains in human female at the time of birth of baby?
 A. Estrogen
 B. Progesterone
 C. Oxytocin
 D. Corticosteroid

65. Female reproductive system consists all of the following EXCEPT
 A. Ovaries
 B. Oviduct
 C. Cervix
 D. Seminiferous tubules
66. Mesosomes are the invagination of bacterial cell structure
 A. Cell wall
 B. Cell membrane
 C. Plasmid
 D. Cysts
67. Bacteria divide at exponential rate during which growth phase?
 A. Lag
 B. Log
 C. Stationary
 D. Decline
68. Which option is CORRECT about endospore?
 A. Has a short dormant period
 B. Contains moisture for survival
 C. Metabolically actively
 D. Endures extreme condition

CHEMISTRY

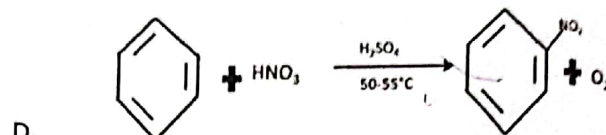
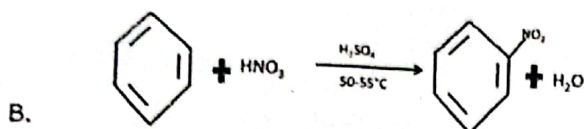
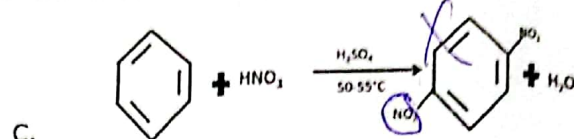
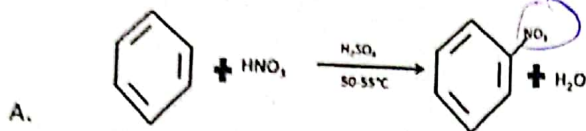
69. Which of the following is NOT a feature of Valence Shell Electron Pair Repulsion theory?
 A. It determines the shape of molecule
 B. Pairs of electrons repel each other
 C. It helps in understanding interaction of medicinal drug molecules
 D. Only lone pairs participate in determining geometry of molecules
70. Which of the following has smallest atomic radius
 A. Mg
 B. S
 C. P
 D. Na
71. The difference of lithium from the other alkali metals is mainly because of:
 A. Large radius and low charge density
 B. Small radius and low charge density
 C. Large radius and high charge density
 D. Small radius and high charge density
72. Which of the following is not Basic in nature
 A. Aluminum oxide
 B. Magnesium oxide
 C. Potassium oxide
 D. Sodium oxide
73. The solubility of sulphates of alkaline metals generally
 A. Increase down the group
 B. Decrease down the group
 C. Increase then decrease down the group
 D. Doesn't change down the group
74. Which of the following is NOT an Alloy
 A. Steel
 B. Brass
 C. Bronze
 D. Graphite
75. Electronic configuration of chromium (Proton number 24) is:
 A. $[Ar] 3d^4 4s^2$
 B. $[Ar] 3d^5 4s^2$
 C. $[Ar] 3d^5 4s^1$
 D. $[Ar] 3d^6 4s^2$
76. Which of the following is NOT a property of transition elements?
 A. High melting points
 B. Good conductors of electricity
 C. Hard metals
 D. Ions and compounds are colorless
77. I-Butene and two Butene are showing which type of isomerism?
 A. Functional Group
 B. Position
 C. Metamerism
 D. Chain

78. Which type of isomerism is displayed by compounds having same structural formula but different position of atoms on both sides of carbon bond?

- A. Chain
B. Metamerism

- C. Geometric
D. Tautomerism

79. Which one of the following represents nitration of benzene correctly?



80. In Friedel Craft acylation an acyl group is introduced in benzene ring in the presence of catalyst:

- A. AlCl_3
B. H_2SO_4

- C. Sunlight
D. V_2O_5

81. Identify correct ascending order of reactivity of alkyl halides:

- A. $\text{Cl}, \text{Br}, \text{I}, \text{F}$
B. $\text{F}, \text{Cl}, \text{Br}, \text{I}$

- C. $\text{Br}, \text{I}, \text{F}, \text{Cl}$
D. $\text{I}, \text{F}, \text{Cl}, \text{Br}$

82. Identify the correct statement related to substitution and elimination of alkyl halides:

- A. Strong bases causes substitution in preference to elimination
B. Role of leaving groups in elimination is similar to substitution

- C. Substitution is favored more than elimination by decreasing solvent polarity
D. Decrease in temperature will favor elimination more than substitution

83. Alkyl Halides involving $-\text{C}-\text{X}$ bond breakage and $-\text{C}-\text{Nu}$ bond formation simultaneously would follow which one of the following mechanisms

- A. $\text{S}_{\text{N}}1$
B. $\text{S}_{\text{N}}2$

- C. E_1
D. E_2

84. $\text{C}_n\text{H}_{2n}\text{O}$ is the general formula of:

- A. Ether
B. Carboxylic acid

- C. Ketones
D. Carbolic acid

85. The blue color of Fehling solution is changed to red when warmed with an aldehyde due to formation of which of the following?

- A. NO_2
B. Cu_2O

- C. AgO
D. SO_2

86. Reaction of HCN with formaldehyde is a:

- A. Nucleophilic addition reaction
B. Nucleophilic substitution reaction

- C. Electrophilic addition reaction
D. Electrophilic substitution reaction

MDCAT 2024 C

87. Which of the following alcohol can give Iodoform reaction?
 A. Methanol
 B. 1-Butanol
 C. 1-Propanol
 D. Ethanol
88. Common name of 2-hydroxy propanoic acid is:
 A. Tartaric acid
 B. Lactic acid
 C. Phthalic acid
 D. Formic acid
89. Which of the following is correct regarding phenol
 A. Phenol and water are equally acidic
 B. Phenol is less acidic than carboxylic acid
 C. Phenol is less acidic than water
 D. Phenol is less acidic than ethanol
90. When carboxylic acid are heated with alcohol in the presence of sulphuric acid one of the following is formed
 A. Amides
 B. Acyl chloride
 C. Esters
 D. Acid Anhydride
91. Which one of the following is not an amino acid
 A. Folic acid
 B. Glutamic acid
 C. Glycine
 D. Lysin
92. Boiling point of a liquid is a temperature at which:
 A. Surface tension is greater than the atmospheric pressure
 B. Viscosity is less than the atmospheric pressure
 C. Vapour pressure equals the atmospheric pressure
 D. Viscosity equals the atmospheric pressure
93. Whenever the crystalline solids are broken they do so along definite planes known as:
 A. Cleavage planes
 B. Refractory planes
 C. Sagittal planes
 D. Coronal planes
94. One of the following is NOT an example of amorphous solids
 A. Plastic
 B. Glass
 C. Glucose
 D. Rubber
95. In graphite the carbon atoms are arranged in which of the following structure?
 A. Rhombic
 B. Hexagonal
 C. Tetragonal
 D. Trigonal
96. The principle that states that if a stress is applied to a system at equilibrium the system nullify the effect of stress as far as possible is:
 A. Haber's
 B. Le-Chatelier
 C. Boyle's
 D. Charles'
97. Identify the CORRECT option required for the maximum yield of ammonia by Haber's process:
 A. High pressure low temperature continual removal of ammonia
 B. Low pressure low temperature continual removal of ammonia
 C. High pressure high temperature continual removal of ammonia
 D. High pressure low temperature continual addition of ammonia

98. Consider the following reaction in equilibrium and tell addition of which chemical will turn the cloudy solution into clear solution?



- A. BiCl_3 C.
B. H_2O D. HCl

99. Identify the correct formula to calculate rate of reaction:

- A. Change in concentration of substance $\div$ Time taken for the change
B. Time taken for the change $\div$ Change in concentration of substance
C. Time taken for the change $\div$ Change in concentration of substance $\times 100$
D. Time taken for the change $\times$ Change in concentration of substance

100. Consider the hypothetical equation $a\text{A} + b\text{B} \rightarrow c\text{C} + d\text{D}$: Which of the following represents correct rate equation?

- A. Rate = $k[\text{A}][\text{B}]$
B. Rate = $k[\text{A}]^a[\text{B}]^b$
C. Rate = $k[\text{A}]^a$
D. Rate = $k[\text{B}]^2$

101. If a reaction rate does not change with concentration then it is

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

102. Which of the following is CORRECT Arrhenius equation?

- A. $K = Ae^{-E_a/QT}$
B. $K = Ae^{-E_a/RT}$
C. $K = Ae^{-E_a/ST}$
D. $K = Ae^{-E_a/UT}$

103. In endothermic reaction, the heat content of the

- A. Reactants and products is equal
B. Reactants is more than that of products
C. Products is more than that of reactants
D. Reactants & Products will not change

104. All of the following steps are used to calculate the lattice energy in Born-Haber cycle EXCEPT

- A. Atomizing the metal
B. Ionizing the metal
C. Deionize the metal
D. Ionize non metal

105. The enthalpy change when 1 Mole of water is formed by the reaction of acid with an alkali under standard conditions is known as:

- A. Enthalpy of formation
B. Enthalpy of reaction
C. Enthalpy of combustion
D. Enthalpy of neutralization

106. Oxidation number of 'Mn' in KMnO_4 is

- A. 0
B. +1
C. -7
D. +7

$$+1 + 4(-2) = 0$$

$$-8 + 1 = -7$$

107. Which step is irrelevant with respect to balancing of redox equations by oxidation number method?

- A. Split the reaction into two half reactions
B. Assign oxidation number to all the atoms involved in the equation
C. Identify the element undergoing a change in oxidation number
D. Equalize the number of electrons lost and gained

108. Which of the following is NOT a correct feature of electrolytic cells?

- A. Reduction occurs at cathode
B. Oxidation occurs at anode
C. Alternating current source is connected to electrodes
D. Electrochemical reaction takes place

109. Which of the following has a coordinate bond?

- A. NaCl
B. CaO
C. NH_3BF_3
D. H_2O

110. Homocyclic organic compounds are sub divided into two types namely:

- A. Alicyclic and Aromatic
B. Alkenes & Alkynes
C. Aromatic and Non aromatic
D. Saturated & Unsaturated

111. Which of the following is an example of substituent group which release electrons to benzene ring:

- A. $-\text{CN}$
B. $-\text{NR}_3^+$
C. $-\text{NH}_2$
D. $-\text{NO}_2$

112. Number of moles in an element is directly proportional to:

- A. Mass of an element
B. Empirical formula mass
C. Molar mass of an element
D. Formula mass

113. The type and relative amount of each isotope in an element can be found by:

- A. R spectroscopy
B. U. V spectroscopy
C. Mass Spectrometry
D. N.M.R

114. The atomic masses of element depend upon:

- A. Atomic number
B. Number of electrons
C. Number of isotopes & their abundance
D. None of the above

115. No individual atom in the sample of 1 mole of Neon has a mass of 20.18 a.m.u. because it is:

- A. Overall mass of an isobar
B. It is a fractional mass
C. It is molar mass of Ne
D. Average atomic mass of Ne

116. The p orbital has

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

117. Which of the following electronic configuration is correct for carbon?

- A. $1s^2 2s^2 2p^3$
B. $1s^2 2s^2 2p^4$
C. $1s^2 2s^2 2p^2$
D. $1s^2 2s^2 2p^1$

118. Intermolecular forces between molecules of ideal gas are

- A. Strong
B. Moderate
C. Weak
D. Absent

119. The correct ideal gas equation is

- A. $qV=nRt$
B. $pV=nRt$
C. $gV=nRt$
D. $yV=nRt$

120. The real gases show deviation from ideal behavior at:

- A. Low temperature and low pressure
B. High temperature and high pressure
C. Low temperature and high pressure
D. High temperature and low pressure

121. In order to boil water at 110°C , external pressure should be

- A. 200 - 760 torr
B. 760 - 1200 torr
C. 665-670 torr
D. 660-700 torr

122. Which one of the following DO NOT have tendency to form hydrogen bonding?

- A. Ammonia
B. Ethyl alcohol
C. Carboxylic acid
D. Hydrocarbon

PHYSICS

123. The S.I unit of capacitance of a capacitor is:

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

$$E = \frac{Q}{A}$$

124. Electric intensity between two oppositely charge plates in the middle region is _____
 A. Non-uniform C. Cannot be predicted
 B. Uniform D. Variable
125. Find potential difference in moving 2 C charge which requires 600J of work between two points.
 A. 1200V C. 150V
 B. 300V D. 2400V
126. Which one of the following is NOT a feature of electric forces?
 A. They act on charges C. They can be attractive
 B. They act on masses D. They can be repulsive
127. A charge of 90 C passes through a wire for 30 seconds. Then the current in the wire will be:
 A. 3A C. 3 mA
 B. 0.3 A D. 0.3 mA
128. The magnitude of the current in metals is proportional to the potential difference across it as long as temperature of conductor is kept constant is known as:
 A. Joule's Law C. Ohm's Law
 B. Gauss Law D. Ampere's Law
129. When length of copper wire is doubled then resistivity becomes:
 A. Double C. Remains same
 B. Half D. Four times
130. The resistance of semi-conductor with rise in temperature
 A. Increases C. Remain same
 B. Decreases D. Infinite
131. Volt x Ampere is the measure of;
 A. Current C. Resistance
 B. Volt D. Power
132. The formula $\phi = B.A$ represents
 A. Electric flux C. Electric flux density
 B. Magnetic flux D. Gravitational flux
133. Which of the following statement is incorrect for any magnetic field lines?
 A. Lines start at north pole and ends at south pole C. The lines are curved
 B. Lines never touch or cross each other D. Magnetic field is strongest when the lines are farthest
134. The unit of magnetic flux density is;
 A. Wbm^{-1} C. Wbm^{-2}
 B. Wbm D. Wb
135. The induced current will flow in such a direction so as to oppose the cause that produces it is statement of of:
 A. Ampere's Law C. Lenz's Law
 B. Faraday's Law D. Joule's Law
136. In an AC generator the emf will be maximum when factor $\sin \omega t$ is equal to
 A. Zero C. 2
 B. 1 D. 1/2
137. Electric generators and transformers are based on the principles of:
 A. Coulomb's law C. Ampere's law
 B. Faraday's law D. Hook's law

$$V = \frac{6.63 \times 10^{-34}}{10^{-27} \times 6.6 \times 10^{10}}$$

$$I \propto V$$

$$\frac{6.63 \times 10^{-34}}{6.6 \times 10^{-9}} \times 10^{-3}$$

$$h = \frac{mv}{\omega}$$

$$66 \sqrt{\frac{10}{663}}$$

$$\frac{300}{300}$$

$$\frac{14}{10^9} \times \frac{6.63 \times 10^{-34} \times 1}{1.9 \times 10^{-5} \times 10^6}$$

$$\frac{366}{110}$$

$$\frac{1366}{366}$$

$$10^{-20}$$

$$\frac{6.63 \times 10^{-34} \times 35}{106 \times 10^{-30}}$$

$$10^{-37+30}$$

$$10^{-7}$$

$$106 \sqrt{\frac{6630}{106}}$$

$$\frac{1}{551}$$

MDCAT 2024 C

$$E = E_{\max} \sin \omega t$$

$$\sin 0 = 0 \approx 1$$

$$E = N \omega A B \sin \omega t$$

$$E = N \omega A B \sin \omega t$$

$$\frac{106}{119}$$

$$\frac{1}{551}$$

$$10$$

138. In an ideal transformer:
A. Power input is equal to Power output
B. Power input is less than half of the power output
C. Power input is greater than Power output
D. Power input is more than half of the power output
139. The conversion of A.C into D.C is called rectification and circuit is called rectifier. Which component of electronics acts as a rectifier?
A. Diode
B. Transistor
C. Transformer
D. Inductor
140. Full wave rectification is given by:
A. One diode connected in bridge type arrangements
B. Two diodes connected in bridge type arrangements
C. Three diodes connected in bridge type arrangement
D. Four diodes connected in bridge type arrangements
141. A diode characteristic curve is a plot between:
A. Current and time
B. Voltage time
C. Voltage and current
D. Reverse voltage forward voltage
142. The value of Planck constant is
A. $6.63 \times 10^{-34} \text{ Js}$
B. $6.63 \times 10^{34} \text{ Js}$
C. $6.63 \times 10^{-34} \text{ Js}^{-1}$
D. $6.63 \times 10^{34} \text{ Js}^{-1}$
143. The de-Broglie wavelength associated with a particle moving at 106 m/s and having mass 10-30 kg
A. $6.6 \times 10^{-10} \text{ m}$
B. $1.5 \times 10^9 \text{ m}$
C. $1.9 \times 10^{-5} \text{ m}$
D. $7.2 \times 10^{-8} \text{ m}$
144. Light propagates through space as a wave is evident by all of the following EXCEPT
A. Interference
B. Photoelectric effect
C. Diffraction
D. Polarization
145. Which series falls in ultra violet region?
A. Lyman
B. Brachett
C. Pfund
D. Paschen
146. The potential through which an electron should be accelerated, so that, on collision it can lift the electron in the atom from its ground state to some higher state is known as
A. Ionization potential
B. Excitation potential
C. String potential
D. Acceleration potential
147. Which of the following regarding X Rays is INCORRECT
A. Have higher wavelength than visible light
B. They are part of electromagnetic spectrum
C. They are highly penetrating in soft body tissues
D. They are high energy photons
148. The unit of decay constant is;
A. m
B. s
C. s^{-1}
D. m^{-1}
149. If we have " N_0 " number of any radioactive element then after a period of " n " half-lives the number of atoms left behind is
A. $2^n N_0$
B. $(\frac{1}{2})^n N_0$
C. $(\frac{1}{2} N_0)^n$
D. $(2N_0)^n$
150. Which of the following is NOT the Somatic biological effect of radiation?
A. Skin burn
B. Loss of hair
C. Induction of cancer
D. Genes mutation

$$\frac{663}{106} = \frac{330}{52} = \frac{165}{26}$$

$$\frac{33}{5}$$

$$\frac{6.63}{106}$$

$$\frac{340}{27} = \frac{6.6}{5\sqrt{33}} = \frac{6.6}{30}$$

$$\frac{1165}{250}$$

$$h = \frac{h}{mv} = \frac{6.63 \times 10^{-34}}{106 \times 10^{-27} \times 1000}$$

$$E = hf = \frac{hc}{\lambda} = \frac{12400}{\lambda}$$

$$\frac{6.63}{19.89}$$

$$\frac{34}{8}$$

$$\frac{340}{27} = \frac{109}{7}$$

$$h = \frac{h}{mv} = \frac{6.63}{106}$$

$$\frac{6.63}{106}$$

$$106 \sqrt{\frac{6.63}{636}} = \frac{6.63}{270}$$

$$\frac{106}{636}$$

$$h = \frac{h}{mv} = \frac{6.63 \times 10^{-34}}{6.6 \times 10^{-16} \times 10^{30}} = \frac{663}{106} = \frac{220}{35} = \frac{6.4}{50}$$

- 10123
Bushra
151. An artificial radioactive element can be made by bombarding
 A. High energy particles on unstable elements
 B. Low energy particles on unstable elements
 C. High energy particles on stable elements
 D. Low energy particles on stable elements
152. In an elastic collision the total kinetic energy
 A. Dissipates after collision
 B. Increases after the collision
 C. Reduces after the collision
 D. Before and after collision remains the same
153. The instantaneous velocity along the curved path is ;
 A. Along the tangent
 B. Perpendicular to the slope
 C. Parallel to the radius
 D. Anti-parallel to the radius
154. The range of projectile will be maximum if the factor $\sin 2\theta$ becomes
 A. Zero
 B. 1
 C. -1
 D. 2
155. The two dimensional motion under constant acceleration due to gravity is called:
 A. Circular motion
 B. Rotational motion
 C. Projectile motion
 D. Vibratory motion
156. In velocity time graph the area under graph is equal to the:
 A. Speed of an object
 B. Velocity of an object
 C. Distance covered by object
 D. Acceleration of an object
157. According to Newton's Law of Motion the mass of the object is a quantitative measure of its:
 A. Weight
 B. Inertia
 C. Speed
 D. Acceleration
158. 1KWh = 3.6M J?
 A. 3.6J
 B. 3.6KJ
 C. 3.6 MJ
 D. 3.6 GJ
159. Which of the following is a non-conservative force?
 A. Frictional force
 B. Electric force
 C. Elastic spring force
 D. Gravitational force
160. Work done is equal to:
 A. Effort $\times$ distance
 B. Effort $+$ distance
 C. Effort $-$ distance
 D. Effort $\div$ distance
161. When a force of 1N displaces its point of application by 1m in the direction of force, the work done is
 A. 1 J
 B. 10 J
 C. 0 J
 D. J
162. An electric motor is used to lift the weight of 2.0N through a vertical distance of 100 cm in 4 sec. What is the power output of the motor?
 A. 0.25 W
 B. 0.5 W
 C. 0.75 W
 D. 1 W
163. The centripetal acceleration of an object moving along a circle of radius 'r' with an angular speed 'w' is given by the formula:
 A. $a = rw^2$
 B. $a = r\omega$
 C. $a = r^2 \omega$
 D. $A = r^2 \omega^2$
164. An air craft makes a turn in a horizontal circle of radius 100m. It is travelling with a velocity of 250m/sec. The angular velocity of the air craft will be:
 A. 1.5 rad/sec
 B. 2.5 rad/sec
 C. 3 rad/sec
 D. 3.5 rad/sec

$$P = \frac{W}{t} = \frac{Fd}{t} = \frac{wd}{t} = \frac{2 \times 100 \times 10^2}{4}$$

165. A particle of mass 'm' is moving on a circular path of radius 'r' with velocity 'v', then centripetal force acting on it is F. If the velocity of particle increases by 2 times and radius of circular path increases by 4 times then new centripetal force F' will be;

A. $F' = 2F$
 B. $F' = \frac{1}{2}F$

C. $F' = 4F$
 D. $F' = F$

$$F = \frac{mv^2}{r} = \frac{(2v)^2 m}{4r}$$

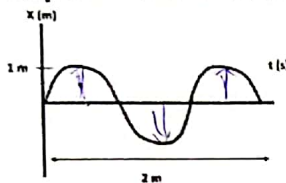
166. A roller coaster is moving with 30 ms^{-1} on a circular track of radius 30m. The net mass of coaster + passengers is 'm' the centripetal force acting on it is;

A. 900m
 B. m

C. 450 m
 D. 30m

$$F = \frac{mv^2}{r} = \frac{m(30)^2}{30}$$

167. Amplitude in the following figure is given as:



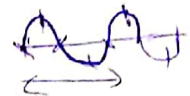
A. 2m
 B. $\frac{1}{2}m$

C. $\frac{1}{4}m$
 D. 1m

168. Which one of the following is INCORRECT about the nodes when the string is plucked;

A. Amplitude of vibration is zero
 B. Do not move along the string

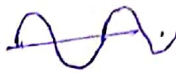
C. Produced at the fixed ends of strings
 D. Distance between consecutive nodes is 1 wavelength



169. In transverse waves the portion above the mean level is called:

A. Wave front
 B. Wave crest

C. Wave trough
 D. Wave length



170. Which one of the following does not cause stationary waves?

A. Two waves of equal frequency
 B. Two waves of same speed

C. Two waves of unequal amplitude
 D. Two waves travelling in opposite directions

171. Select the appropriate Doppler equation when source is approaching the stationary observer where f_o is the observed frequency, f_s is frequency of source, v is the speed of sound, v_s is the speed of source relative to observer

A. $f_o = \frac{v}{v - v_s} f_s$
 B. $f_o = \frac{v}{v + v_s} f_s$

C. $f_o = \frac{v - v_s}{v} f_s$
 D. $f_o = \frac{v - v_s}{v + v_s} f_s$

172. The distance between two successive particles which are exactly in the same state of vibration is called

A. Frequency
 B. Amplitude

C. Wavelength
 D. Time period

173. During the isothermal process, the temperature

A. remains constant during the initial phase of the process
 B. remains constant throughout the process

C. alters throughout the process
 D. increases throughout the process

174. What is the value of heat energy (Q) in an adiabatic process?

A. +1
 B. -1

C. 0
 D. +2

175. The Coulomb's law states

- A. Force between two point charges is inversely proportional to the product of the charges and directly proportional to the square of the distance between them
- B. Force between two point charges is directly proportional to the product of the charges and inversely proportional to the square of the distance between them

176. The formula $V = W / q$ represents

- A. Electric intensity
- B. Electric power

- C. Force between two point charges is directly proportional to the sum of the charges and inversely proportional to the square of the distance between them
- D. Force between two point charges is directly proportional to the product of the charges and the square of the distance between them

- C. Electric potential
- D. Electric field gradient

ENGLISH

177. The soup _____ good

- A. Taste
- B. Tastes

178. Pick the CORRECT option:

- A. The supervisor has nor will ever compromise.
- B. The supervisor have nor will ever compromise.

179. What does the word "SPILL" mean?

- A. Coil
- B. Deliver

180. What does the word "ANCESTOR" mean?

- A. Collection of stars
- B. Branch of astrology

181. What does the word "SURPLUS" mean?

- A. In excess
- B. A mathematical term

182. Choose the CORRECT sentence

- A. It was greatly good by you to proposd day's picnic at murree
- B. It was awfully good by you to proposed a day's picnic in Murree.

183. Choose the CORRECT sentence

- A. The first space traveller was Dennis Tito from the United States.
- B. The First Space Traveller was Dennis Tito, from, the United states

184. Choose the CORRECT sentence

- A. You have often heard of me speaking of my friend Wahaj waheed a barrister here
- B. You have often heard me speak of my friend, Wahaj Waheed, who is a barrister here.

185. Choose the CORRECT sentence

- A. "The unexamined life", said Socrates, "is unfit to be lived by man."
- B. The inexamined life, said Socrates, "is unfit to be lived by man"

- C. Is tasting
- D. Has taste

- C. The supervisor has not compromised nor will ever compromise.
- D. The supervisor has nor will ever compromised

- C. Spoil
- D. Spread

- C. Forefathers
- D. Type of receptors

- C. Within reach
- D. Salutation

- C. It was awfully good of you to propose a day's picnic at Murree.
- D. It was very good off you too propose days picnic in Murree

- C. The first space traveller was Dennis Tito-from united State
- D. The first space travaler was Dennis Tito, from the United States

- C. You have often heard me. Speak off my friend, wahaj waheed who is a Barrister here
- D. you have often heard me speak about my friend; wahaj waheed-a barrister hear

- C. "The unexamined life said Socrates", is disflt to be lived by man.
- D. "The disexamined life" said Socrates is unfit to be lived by man.

186. Choose the CORRECT sentence

- A. Gulliver travels was writen to Swift.
B. Gulliver travels was writen at Swift.

- C. Gulliver's Travels was written by Swift.
D. Gullivers' travel was written by Swift

187. Choose the CORRECT sentence

- A. There's mr. hashim whome they say is the best portrait painter in the town.
B. There's Mr. Hashim, who they say is the best portrait painter in the town.

- C. Theres' Mr. Hashim which they say is the portrait painter in the town
D. There's Mr. Hashim who they say is best portrait painter in the town.

188. He takes _____ his father. Fill in the blank with appropriate preposition.

- A. Up
B. Down

- C. After
D. In

189. _____ words spoken in earnest will convince him

- A. A few
B. The few

- C. Few
D. Fewer

190. Choose the correct sentence

- A. In 1838 Schleiden suggested that all plants were made of cells
B. In 1838 Schleiden suggest that all plants were made of cells

- C. In 1838 Schleiden suggested that all plant were made of cells
D. In 1838 Schleiden suggested to all plants were made of cells

191. Choose the CORRECT sentence

- A. She has beauty, brains and wealth-a rare combination.
B. She has beauty, brains, and wealth-a rare combination.

- C. She has beauty, brains, and wealth; a rare combination.
D. She has beauty, brains, and wealth: a rare combination.

192. Choose the CORRECT spellings.

- A. Pharaoh
B. Pharoah

- C. Pheroh
D. Pheraoh

193. Choose the sentence that is punctuated correctly:

- A. He said to his disciples "Watch and pray."
B. He said to his disciples, "Watch and pray."

- C. He said to his disciples, "watch and, pray"
D. He said to his disciples' "watch and pray.

194. I _____ him for a long time.

- A. Have never known
B. Had never knew

- C. Had never been known
D. Would never knew

LOGICAL REASONING**195. Read the following and choose the correct answer: "P, Q and R are one-digit, non-negative numbers. P is the smallest even number. Q is the largest odd number. R is 5."**

A. $2P + Q + R = 16$
B. $P + Q + R = 12$

C. $(Q + R) \times P = 30$
D. $(Q + R) \times P = 8$

196. The government has increased the taxes on all businesses in Pakistan. II. Many small businesses will have to close their operations in Pakistan.

- A. Statement I is the cause and statement II is its effect
B. Statement II is the cause and statement I is its effect

- C. Both the statements I and II are independent causes
D. Both the statements I and II are effects of independent causes

$P=2 \quad Q=5 \quad R=5$
 $P+Q+R$
 $2+5+5=12$

$(5+5) \times 2 = 20$

197. Read the following and choose the correct answer: "X, Y and Z are three whole numbers less than 24 but greater than 11. X is the smallest prime number. Y is the largest number divisible by 3. Z is the smallest number divisible by 11?"
A. X is 13, Y is 24, Z is 11
B. X is 13, Y is 21, Z is 22
C. X is 11, Y is 21, Z is 11
D. X is 11, Y is 24, Z is 22
198. All hammers are tools. Some tools are useless things. All useless things are trash. Which of the following conclusions is NECESSARILY TRUE given only the information above? CONCLUSIONS: I. Some hammers are trash II. Some tools are trash III. All useless things are tools.
A. I
B. II
C. III
D. I & III
199. Read the passage and the following statements below. Then choose the correct option, basing your answer only on the information provided. Pakistan is rich in wildlife and culture. It is home to many sorts of wildlife, from the Ibex to the Indus River Dolphin; and people from most countries in the world have made their home here. STATEMENTS: I. Pakistan is a rich country. II. People from all nationalities of the world live in Pakistan. III. Pakistan is home to at least one dolphin species.
A. Only III is correct
B. Only I and II are correct
C. Only I and III are correct
D. Only II and III are correct
200. Observe the pattern and select the next term, in the sequence: JEQ, HEO, FEM
A. GFN
B. DEK
C. GEL
D. DFK