

BIOLOGY

1. Constant region of a specific type of antibody is made up of _____ type of amino acids.
 - A. Same
 - B. Different
 - C. Variable
 - D. Hydrophobic
2. Primary immune response is characterized by:
 - A. Rapid antibody production
 - B. Slow and low antibody production
 - C. No antibody formation
 - D. Immediate and strong immunity
3. Breathing is also named as?
 - A. Internal respiration
 - B. Cellular respiration
 - C. Inspiration
 - D. Ventilation
4. Warming up of the air in nasal cavity occurs with the help of blood capillaries, located _____:
 - A. Underneath mucous membrane
 - B. Surrounding the cilia
 - C. Surrounding cartilages
 - D. In the nasopharynx
5. Intercostal muscles are _____?
 - A. Skeletal muscles
 - B. Involuntary smooth muscles
 - C. Voluntary smooth muscles
 - D. Cardiac muscles
6. Expansion and contraction of the lungs is accomplished by
 - A. Smooth muscles in bronchioles
 - B. Smooth muscles in alveoli
 - C. Intercostal muscles
 - D. Diaphragm & intercostal muscles
7. During gaseous exchange in human, how many times cell membranes of different cells are crossed by oxygen molecule from alveolar air to reach the RBC in alveolar capillaries?
 - A. 2
 - B. 3
 - C. 4
 - D. 5
8. The pepsin is converted into active form by the action of:
 - A. Trypsin
 - B. Chymotrypsin
 - C. Acidic medium
 - D. Alkaline medium
9. The back flush of acidic chyme from stomach to esophagus lead to burning sensation in the chest known as
 - A. Pyrosis
 - B. Cirrhosis
 - C. Segmentation
 - D. Peristalsis
10. Which component of bile produced by liver may cause gall stones?
 - A. Iron
 - B. Bilirubin
 - C. Cholesterol
 - D. Lipase
11. Chymotrypsin present in pancreatic juice is responsible for
 - A. Digestion of lipids to glycerol and fatty acids
 - B. Digestion of DNA and RNA into nucleotides
 - C. Digestion of proteins into smaller peptides
 - D. Digestion of polysaccharides into maltose or glucose
12. How does pancreatic amylase digest carbohydrates?
 - A. Digests polysaccharides into maltose
 - B. Digests polysaccharides into sucrose
 - C. Digests polysaccharides into lactose
 - D. Digests polysaccharides into galactose
13. Which of the following events would likely produce hunger pangs in your stomach, when you are fasting?
 - A. Low sodium level in blood
 - B. Antiperistalsis of alimentary canal
 - C. Low blood glucose
 - D. Dehydration in body
14. Which process directly depends on hydrostatic pressure in the kidney functioning?
 - A. Pressure Filtration
 - B. Selective Reabsorption
 - C. Tubular Secretion
 - D. Osmoregulation
15. Hypercalcemia & Hypercalciuria are responsible for kidney stones and are due to condition:
 - A. Hypothyroidism
 - B. Hyperthyroidism
 - C. Hypoparathyroidism
 - D. Hyperparathyroidism
16. In situation of dehydration, human kidneys respond by:
 - A. Decreasing blood pressure
 - B. Decreasing ADH secretion
 - C. Increasing water reabsorption
 - D. Increasing urine output

- 17.** Which of the following is not the function of kidney?
- Ion regulation
 - Water regulation
 - Temperature regulation
 - Waste removal
- 18.** An increased aldosterone secretion results in _____
- Loss of Na ions
 - Retention of Na ions
 - Increased glucose
 - Reduced urine
- 19.** When monoclonal antibodies are combined with fluorescent labels, this technique is known as:
- Fluorescence microscopy
 - Fluorescence crystallography
 - Fluorescence therapy
 - Fluorescence biography
- 20.** The enzyme which joins two pieces of DNA is:
- DNA Polymerase I
 - DNA Polymerase III
 - DNA Ligase
 - Restriction Endonuclease
- 21.** DNA probes are best described as:
- Enzymes that cut DNA
 - Short, single-stranded DNA sequences complementary to target DNA
 - Double-stranded RNA molecules
 - Antibodies that bind proteins
- 22.** The shape of a bacteriophage is:
- Spherical
 - Helical
 - Tadpole like
 - Comma like
- 23.** In the host Helper-T lymphocytes, the viral RNA is converted into cDNA by _____.
- Transcriptase
 - RNA polymerase
 - DNA polymerase
 - Reverse transcriptase
- 24.** The virus responsible for AIDS is classified as:
- DNA virus
 - Retrovirus
 - Viroid
 - Bacteriophage
- 25.** Which of the following best defines the removal of electrons from a substance by the addition of oxygen or removal of hydrogen?
- Oxidation
 - Reduction
 - Phosphorylation
 - Dephosphorylation
- 26.** Which of the following is a major benefit of anaerobic respiration during exercise in humans?
- Glucose molecules are fully oxidised during anaerobic respiration
 - Anaerobic respiration can supply ATP very rapidly for a short period of time
 - It produces useful byproducts
 - Anaerobic respiration can supply ATP indefinitely
- 27.** Oxidation, decarboxylation and addition of coenzyme-A to pyruvate results into the production of
- Acetyl Co-A
 - Phosphoenolpyruvate
 - Glucose 6-phosphate
 - Citrate
- 28.** Proteins are held in their tertiary structure by interactions between R group molecules mainly through:
- Covalent bonding
 - Hydrogen bonding and hydrophobic interactions
 - Ionic interactions
 - Disulfide bridges
- 29.** The common feature(s) of prokaryotic and eukaryotic cells is/are _____.
- Presence of plasma membrane only
 - Presence of ribosomes only
 - Presence of genetic material only
 - Presence of plasma membrane, ribosomes & genetic material
- 30.** Which of the following is a biopolymer?
- Water
 - Phospholipids
 - Histone
 - Waxes
- 31.** Information regarding a living organism's body processes from construction of body structure to flow of information from nucleus are provided by:
- Biogenic elements
 - Biological molecules
 - Inorganic molecules
 - Organic molecules

- 32.** Peptide bond is formed between
 A. C-terminal and C-terminal
 B. N-terminal and C-terminal
 C. N-terminal and N-terminal
 D. C-terminal and OH-terminal
- 33.** In which of the following organelles does the process of Transcription take place?
 A. Ribosomes
 B. Golgi complex
 C. Lysosomes
 D. Nucleus
- 34.** The approximate diameter of chromatin at the level of supercoiling is
 A. 250nm
 B. 300nm
 C. 350nm
 D. 400nm
- 35.** Which of the following organelles predominantly produces Adenosine Triphosphate (ATP) in the cell?
 A. Nucleus
 B. Ribosome
 C. Mitochondria
 D. Endosome
- 36.** In mitochondria, small knob like structures called F-1 particles are found in _____.
 A. Outer membrane
 B. Inner membrane
 C. Outer component
 D. Inner component
- 37.** Sucrose is formed by the joining of glucose and fructose. Similarly, glucose + glucose joins to form which of the following?
 A. Cellobiose
 B. Lactose
 C. Maltose
 D. Sucrose
- 38.** Which of the following is correct about a nucleotide?
 A. It may consist of one to five nitrogenous bases
 B. It may consist of one or two pentose sugar units
 C. It may consist of one to three phosphate groups
 D. It may consist of a pentose or hexose sugar
- 39.** Which of the two nucleotides have 2 ringed structures?
 A. Adenine and Guanine
 B. Cytosine and Thymine
 C. Adenine and Thymine
 D. Cytosine and Guanine
- 40.** Which organelle is in abundance in secretory cells?
 A. Mitochondria
 B. Golgi complex
 C. Nuclei
 D. Nucleoli
- 41.** Olfactory bulb is present in:
 A. Nose
 B. Nasal Cavity
 C. Throat
 D. Brain
- 42.** The axon of a motor neuron forms synapses with _____.
 A. Axon of sensory neuron
 B. Dendron of sensory neuron
 C. Receptors
 D. Muscle cells/effector
- 43.** Which part of the brain stores human memory?
 A. Cerebrum
 B. Medulla oblongata
 C. Hypothalamus
 D. Corpus callosum
- 44.** If there is an injury in the hypothalamus region of the brain, it is most likely to affect:
 A. Coordination during locomotion
 B. Short-term memory
 C. Regulation of body temperature
 D. Decision making
- 45.** Which one of the following is involved in blinking of an eye?
 A. Spinal reflex
 B. Cranial reflex
 C. Membrane reflex
 D. Nuclear reflex
- 46.** Brain stem includes all of the following, except.
 A. Cerebrum
 B. Pons
 C. Midbrain
 D. Medulla Oblongata
- 47.** Which of the following models describe how enzymes interact with their substrate?
 A. Induced fit model
 B. Lock and Key model
 C. Fluid mosaic model
 D. Sliding filament model

- 48.** Which of the following truly describes the Activation Energy of an Enzyme?
- Total energy of the reaction system
 - Minimum energy required to start a chemical reaction
 - Energy lost during the chemical reaction
 - Energy difference between the chemical potential energy of the reactants and the products
- 49.** How does an enzyme increase the rate of a reaction?
- By bringing the reaction molecules into precise orientation
 - By increasing the rate of random collisions of molecules
 - By shifting the point of equilibrium of the reaction
 - By supplying the energy required to start the reaction
- 50.** Naturally, enzymes increase reaction rate without:
- Converting substrate into products
 - Being consumed in reaction
 - Lowering its activation energy
 - Forming enzyme-substrate complex
- 51.** Darwin believed in perceived unity of life with _____ related through descent from _____.
 - all organisms: common ancestors
 - few organisms: different ancestors
 - few organisms: common ancestors
 - all organisms: different ancestors
- 52.** In Darwin's theory of natural selection, "struggle for existence" is:
- Fight for territory
 - Competition for survival
 - Fight for evolution
 - To admit the rights of others
- 53.** History of life is like a tree. This concept of Darwinism is called:
- Natural selection
 - Descent with modification
 - Struggle for existence
 - Over production
- 54.** A researcher claims that environment directly induces useful traits in organisms, that are inherited in next generations. This idea aligns with:
- Lamarckism
 - Darwinism
 - Special creationism
 - Neo-Darwinism
- 55.** The first menstrual flow is:
- Menopause
 - Menstruation
 - Menarche
 - Ovulation
- 56.** Which of the following is NOT a feature of cartilaginous joints?
- Slight mobility
 - Absence of synovial fluid
 - Presence of cartilage
 - Limited movement
- 57.** All enzymes are _____ proteins?
- Globular & insoluble in water
 - Globular & soluble in water
 - Fibrous & insoluble in water
 - Fibrous & soluble in water
- 58.** A marked increase in temperature reduces the rate of the enzyme catalyzed reaction by _____
- Decreasing the kinetic energy of substrate
 - Changing the pH of reaction media
 - Destroying the tertiary structure of enzyme
 - Decreasing the activation energy
- 59.** The cessation (end) of menstruation in female is called
- Menarche
 - Menstrual cycle
 - Menopause
 - Maturation
- 60.** A sudden rise in estrogen levels in females, may lead to which event?
- Menstruation
 - LH surge
 - Implantation
 - Progesterone drop
- 61.** Which hormone is involved in the menstrual cycle and its secretion is increased right after day 14 and starts decreasing again at the end of the cycle, and if fertilization takes place then its concentration is further increased by the placenta?
- FSH
 - LH
 - Progesterone
 - Both LH and FSH
- 62.** Nerve impulse is carried directly to sarcoplasmic reticulum through:
- Sarcolemma
 - Sarcoplasm
 - Nerve fibre
 - T-tubule

63. During muscle contraction, after calcium binds to troponin, the binding sites on which protein become exposed?
- Actin
 - Myosin
 - Myoglobin
 - Tropomyosin
64. Osteoarthritis indicates inflammation in the joints of ____.
- Toes
 - Neck
 - Knee
 - Wrist
65. Which of the following changes occur when skeletal muscles contract?
- The A-bands shorten
 - The I-bands shorten
 - The Z-lines move further apart
 - The H-zone becomes more visible
66. When male parent (RR) has a cross with female parent (rr), then according to Law of Segregation all F1 offspring appears with a genotype:
- RR
 - Rr
 - rr
 - Rrr
67. Which of the following genetic disorders cause bleeding disease?
- Sickle Cell anemia
 - Hemophilia
 - Thalassemia
 - Cystic fibrosis
68. Y-linked traits are always passed from father to the:
- Sons only
 - Daughters only
 - 50% sons and 50% daughters
 - 75% sons and 25% daughter
69. How many different genotypes are required for producing a pea plant with round and yellow seeds phenotype?
- 1
 - 2
 - 4
 - 8
70. In which of the following phases of cell cycle, gene crossing over occurs?
- Telophase
 - Prophase I
 - Metaphase I
 - Prophase II
71. Which of the following best describes the production of different combinations of alleles in daughter cells, as a result of the random alignment of bivalents on the equator of the spindle during metaphase I of meiosis?
- Segregation
 - Sex Linkage
 - Crossing Over
 - Independent Assortment
72. A genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny. The disease is:
- Autosomal dominant
 - Autosomal recessive
 - Sex-linked dominant
 - Sex-linked recessive
73. Which chamber of the heart pumps blood to the lungs?
- Right Atrium
 - Right Ventricle
 - Left Atrium
 - Left Ventricle
74. Antigens bind with:
- C-Region of antibody
 - V-Region of antigens
 - C-Region of antigens
 - V-Region of antibody
75. Compared to benzene, nitration of toluene takes place at?
- Same rate
 - Slow rate
 - Faster rate
 - Very slow rate
76. ____ are the bone dissolving cells.
- Osteoclasts
 - Osteocytes
 - Osteoblasts
 - All of these are correct
77. Which one of the following statements is incorrect about circulatory system?
- All arteries carry blood away from the heart
 - All veins carry blood towards the heart
 - All arteries carry oxygenated blood
 - All veins carry blood at low pressure
78. Which of the following valves control the entry of blood into the ventricles of a heart?
- Artioventricular valves
 - Semilunar valves
 - Pulmonary valves
 - Aortic valves

79. The valve of heart through which only oxygenated blood moves is _____.
 A. Tricuspid
 B. Bicuspid
 C. Pulmonary semilunar
 D. Bicuspid and Tricuspid
80. Bicuspid valve guards the opening between _____ in a heart.
 A. Stomach and Intestine
 B. Pulmonary Vein and Left Atrium
 C. Right Atrium and Right Ventricle
 D. Left Atrium and Left Ventricle
81. What are antigens, in the context of immune recognition?
 A. Hormone released during infection
 B. Self-identifying lipids in plasma
 C. Cell surface proteins and Oligosaccharides
 D. Enzymes released by B-cells

CHEMISTRY

82. Alkenes are less acidic than alkynes due to
 A. higher s character
 B. lesser s character
 C. stronger bonds
 D. higher electronegativity
83. 1,3 Butadiene is more stable than 1-Butene, because it is a:
 A. Conjugated Alkene
 B. Cumulenes
 C. Isolated diene
 D. Separated dienes
84. Name of (C₂H₅)₄C
 A. triethyl methane
 B. tetramethyl methane
 C. tetraethyl methane
 D. trimethyl ethane
85. Which one of the following statements is correct for troponin?
 A. It is an ATPase
 B. It binds to actin only
 C. It consists of three polypeptide chains
 D. It has greater affinity with Calcium ions than myosin
86. During Hydrohalogenation of asymmetric alkenes, which rule favors formation of secondary carbocation over primary carbocation?
 A. Hydration rule
 B. Anti-Markovnikov's rule
 C. Markovnikov's rule
 D. Polymeros's rule
87. Which reagent is used to distinguish 1-butyne and 2-butyne?
 A. water in the presence of mercuric sulphate and sulfuric acid
 B. ammoniacal silver nitrate
 C. Acidified potassium manganate(VII)
 D. aqueous bromine
88. _____ can be added, to an alkyl halide to increase the no. of carbon atoms in the parent chain.
 A. HCN in ethanol
 B. KCN in ethanol
 C. Iodoform
 D. Amines
89. Which reagent gives white precipitates when added to phenol?
 A. aq bromine
 B. aq Na₂CO₃
 C. aq NaOH
 D. aq NaOH and benzoyl chloride
90. Which of the following is more acidic?
 A. Phenol
 B. o-methyl phenol
 C. o-nitro phenol
 D. o-Aminophenol
91. Which of these compounds reacts immediately with Lucas reagent and forms an oily layer by turning the solution turbid?
 A. 2-butanol
 B. 2-methyl-2-butanol
 C. 1-propanol
 D. 4-methylphenol (p-cresol)
92. Which of the following gives positive silver mirror test:
 A. CH₃CH₂OH
 B. CH₃CHO
 C. CH₃COOH
 D. CH₃COCH₃
93. Select the acid catalyzed addition reactions of carboxyl compounds from the following
 A. Addition of Grignard reaction
 B. Addition of sodium bisulphite
 C. Addition of alcohols
 D. Addition of hydrogen cyanide
94. When an aldehyde or ketone is reduced using LiAlH₄, followed by hydrolysis, the resultant would be
 A. 1° alcohol from both aldehyde and ketone
 B. 1° alcohol from aldehyde and 2° alcohol from ketone
 C. 2° alcohol from both aldehyde and ketone
 D. 2° alcohol from aldehyde and 3° alcohol from ketone

95. Free radicals are produced by
 A. Homolytic cleavage
 B. Heterolytic cleavage
 C. Reducing agents
 D. Oxidizing agents
96. Acetic acid and ethanol react to produce
 A. aldehyde
 B. ethyl acetate
 C. nitrile
 D. ketone
97. Prosthetic groups are part of the following _____ protein.
 A. Derived
 B. Conjugated
 C. Simple
 D. Non-derived
98. Acrylate base polymers are:
 A. drying adhesives
 B. pressure sensitive adhesives
 C. contact adhesives
 D. hot adhesives
99. What does the symbol (Δ) in a chemical equation represent?
 A. Density
 B. Direction
 C. Heat
 D. Pressure
100. Calculate the number of molecules in 244g of Benzoic acid ($C_7H_6O_2$)
 A. 12×10^{22}
 B. 1.2×10^{24}
 C. 0.12×10^{21}
 D. 12×10^{24}
101. The probability of spin of an electron is supposed to be
 A. 30% clockwise & 70% counterclockwise
 B. 70% clockwise & 30% counterclockwise
 C. 50% clockwise & 50% counterclockwise
 D. 90% clockwise & 10% counterclockwise
102. Methanol is manufactured by reacting carbon dioxide and hydrogen.
 $CO_2(g) + 3H_2(g) \rightleftharpoons CH_3OH(g) + H_2O(g)$, $\Delta H = -49 \text{ kJ/mol}$
 What would increase the equilibrium yield of methanol in this process?
 A. Adding methanol
 B. Adding an excess of steam
 C. Decreasing the pressure
 D. Decreasing the temperature
103. The order of reaction of an elementary reaction is:
 A. equal to molecularity
 B. depend on temperature
 C. can't be predicted
 D. depends on concentration
104. The rate of reaction when concentration becomes unity is called
 A. Average rate
 B. Instantaneous rate
 C. Rate constant
 D. Rate of reaction
105. If enthalpy change of a reaction is negative, then on increasing temperature the reaction will move in which direction?
 A. Forward
 B. Reverse
 C. No change
 D. First reverse then forward
106. Which element will undergo oxidation preferably:
 A. With low reduction potential
 B. With high reduction potential
 C. With low oxidation potential
 D. Cannot be predicted
107. In a redox reaction, the reducing agent is the species that:
 A. Gains electrons
 B. Loses electrons
 C. Remains unchanged
 D. Decreases in its oxidation state
108. The surface of Triton, a moon of Neptune, contains condensed methane that flows rapidly. Which statement explains why condensed methane flows rapidly?
 A. Condensed methane has a metallic structure
 B. Methane molecules contain strong covalent bonds
 C. The intermolecular forces between methane molecules are weak
 D. Methane molecules have a tetrahedral shape
109. Which of the following statements is true for water (temperature between 4°C to 0°C)
 A. The volume of water decreases on cooling
 B. The density of water increases on cooling
 C. The density of water decreases on cooling
 D. The mass of water decreases on cooling
110. Number of sigma bonds and pi bonds in acetylene are?
 A. 3 & 1
 B. 1 & 3
 C. 5 & 2
 D. 3 & 2

- 111.** Which compound will have a maximum dipole moment?
- CH₄
 - CCl₄
 - CH₃Cl
 - C₂H₄
- 112.** An ion with a trinegative charge (-3) has valence shell electronic configuration of 1s² 2s² 2p⁶ 3s² 3p⁶. To which period and group of the periodic table does the given element belong?
- Period III and Group IIIA
 - Period III and Group VA
 - Period V and Group IIIA
 - Period V and Group VA
- 113.** If the temperature of a gas is doubled at constant pressure, what will be its volume:
- Halved
 - Doubled
 - Remains constant
 - Quadrupled
- 114.** Which pair of compounds form hydrogen bond?
- water and acetaldehyde
 - formic acid and acetic acid
 - ethyl acetate and acetic acid
 - acetone and water
- 115.** For an element "X", if the value of Principle quantum number (n) = 4, the largest value of magnetic quantum number "m" can be:
- +1
 - +2
 - +3
 - +4
- 116.** A photon is moving with wave number $1.5 \times 10^6 \text{ m}^{-1}$, its frequency is
- 4.5×10^{14}
 - 3.0×10^{14}
 - 4.5×10^{-19}
 - 3.0×10^{-19}
- 117.** Ideal gas equation for one mole of H₂ is
- $PV = nRT$
 - $P_1V_1/T_1 = P_2V_2/T_2$
 - $PV/RT = 1$
 - $P_1V_2T_2 = P_2V_1T_1$
- 118.** Value of concentration for 1 mol of an ideal gas at STP will be:
- 0.04
 - 0.40
 - 4.40
 - 4.00
- 119.** The ideal gas equation is a combination of _____ laws.
- Charles's, Boyle's
 - Charles's, Avogadro's
 - Boyle's, Avogadro's
 - Charles's, Boyle's, Avogadro's
- 120.** In body centered crystal system the central ion is attached with
- 1 unit cell
 - 4 unit cell
 - 6 unit cell
 - 10 unit cell
- 121.** For an endothermic reversible reaction, the yield will increase if
- Temperature increased
 - Temperature decreased
 - Catalyst added
 - Reactants removed
- 122.** Which of the following elements has the lowest electronegativity value?
- Flourine
 - Iodine
 - Lithium
 - Cesium
- 123.** Sodium metal reacts with ice cold water to produce:
- NaOH
 - Na₂O₄
 - Na₂O₂
 - NaCl
- 124.** Outer-Transition elements are also called:
- s-block elements
 - p-block elements
 - d-block elements
 - f-block elements
- 125.** Those molecules which have chiral center but not mirror image of one another is called
- Epimers
 - Enantiomers
 - Diastereomers
 - Anomers
- 126.** Select free radical involved in initiation of halogenation of methane
- Cl•
 - CH₃•
 - CH₄
 - CH₃Cl

- 127.** 1 mega ohm $\times$ 1 pico farad =
 A. second
 B. milli second
 C. micro second
 D. mega second
- 128.** If "F" is the force between two point charges submerged in a medium of dielectric constant "M", then on withdrawing the medium, the force between them becomes:
 A. $F\sqrt{M}$
 B. FM
 C. F/M
 D. M/F
- 129.** Unit of resistivity i.e. specific resistance is:
 A. $\Omega \cdot m$
 B. Ω
 C. $\Omega^{-1}m^{-1}$
 D. Ω/m^2
- 130.** If diameter of a wire is doubled, its resistivity will:
 A. become half
 B. decrease by four times
 C. increase by four times
 D. remain constant
- 131.** Two particles with same charge and different masses enter perpendicularly in a uniform magnetic field with same speed, the lighter one will move in:
 A. Straight path
 B. Spiral path
 C. Large circular path
 D. Small circular path
- 132.** Which quantity is a vector?
 A. pressure
 B. temperature
 C. weight
 D. work
- 133.** During uniform circular motion, if "v" is tangential velocity, " ω " is angular velocity and "r" is radius. Then which of the following represents cross product correctly
 A. $\omega = v \times r$
 B. $r = \omega \times v$
 C. $v = r \times \omega$
 D. $v = \omega \times r$
- 134.** Cross product of two parallel vectors has a magnitude of:
 A. A
 B. $A \cos \theta$
 C. zero
 D. null vector
- 135.** Projectile motion is best described as:
 A. One-dimensional motion
 B. Variable accelerated motion
 C. Constant acceleration due to gravity
 D. Velocity becomes zero at maximum height
- 136.** A body of mass 5kg is moving with speed 10 m/s. A constant force acts on it for 5 seconds and brings its speed to 5 m/s. The magnitude of force is:
 A. 3 N
 B. 5 N
 C. 15 N
 D. 30 N
- 137.** A passenger standing in a bus falls forward when the bus suddenly stops. This is due to:
 A. Newton's first law
 B. Newton's second law
 C. Newton's third law
 D. Law of gravitation
- 138.** A stone is thrown horizontally with a velocity of 12 ms^{-1} from the top of a vertical cliff. How long does the stone take to reach the ground 45 m below? Take $g = 10 \text{ m/s}^2$
 A. 2 s
 B. 3 s
 C. 4 s
 D. 5 s
- 139.** If the force applied on an object and its velocity are in the same direction, the power delivered to the object is:
 A. Zero
 B. Positive
 C. Negative
 D. Infinite
- 140.** If the velocity is doubled then the K.E of the body will be:
 A. Double
 B. Three times
 C. Four times
 D. Remains constant
- 141.** When a force is parallel to the direction of motion of the body, work done on the body is:
 A. Zero
 B. minimum
 C. maximum
 D. Infinite

- 142.** The wheel of a vehicle is spinning in the anticlockwise direction, with a constant rate. The direction of its angular velocity will be:
- clockwise
 - anticlockwise
 - perpendicular to the plane of rotation
 - along the plane of rotation
- 143.** A point P is on a disk rotating with constant angular velocity. If the distance from the center is tripled, what happens to the ratio of linear velocity and angular velocity (v/ω)?
- It remains the same
 - It triples
 - It is reduced to one-third
 - It increases by factor 9
- 144.** In deriving Bernoulli's equation, the quantity 'pressure/volume' represents:
- density
 - kinetic energy
 - potential energy
 - work done
- 145.** Drag force on a spherical object moving through a fluid depends on
- velocity of the object
 - viscosity of the medium
 - shape and size of the object
 - all of the above
- 146.** Which of the following assumptions is INCORRECT about the fluid that follows equation of continuity?
- It is a non-viscous fluid
 - It moves in a steady flow
 - It moves in a turbulent flow
 - It is an incompressible fluid
- 147.** In a ripple tank 50 waves having wavelength 5cm pass through a certain point with a speed of 2m/s. The frequency of waves is:
- 5 Hz
 - 10 Hz
 - 40 Hz
 - 50 Hz
- 148.** In SHM the maximum displacement covered by the particle from mean position is A. What is the total distance covered in one complete cycle?
- 2A
 - 4A
 - 6A
 - 8A
- 149.** Unlike electromagnetic waves, mechanical waves require:
- source of energy
 - medium for propagation
 - source of disturbance
 - periodic motion
- 150.** A sound wave is set up in a long tube, closed at one end. The length of the tube is adjusted until the sound from the tube is loudest. What is the nature of the sound wave in the tube?
- longitudinal and progressive
 - longitudinal and stationary
 - transverse and progressive
 - transverse and stationary
- 151.** An ideal gas is heated at constant volume. It absorbs 200 J of heat. The work done by the gas is:
- 200 J
 - 0 J
 - 200 J
 - Varies with pressure
- 152.** If "Q" is heat and "W" is work done then "W=Q" represents.
- Isothermal process
 - Adiabatic process
 - Isochoric process
 - Isobaric process
- 153.** Magnetic flux has unit but no direction because
- of scalar product
 - of cross product
 - of sum of two vectors
 - of product of two scalars
- 154.** According to Faraday's law of electromagnetic induction, the magnitude of induced emf depends upon
- magnetic flux
 - magnetic induction
 - change in magnetic flux
 - rate of change in magnetic flux
- 155.** Lenz's law primarily refers to the direction of:
- Voltage
 - Induced current
 - Power
 - Energy
- 156.** When a capacitor is connected to an alternating power source,
- the voltage leads the current by 90°
 - the voltage lags the current by 90°
 - the voltage leads the current by 180°
 - the voltage lags the current by 180°

- 157.** In a pure inductive AC circuit at low frequency the inductive reactance will be
 A. remain same
 B. increase
 C. decrease
 D. zero
- 158.** Which type of biasing results in a very high resistance of PN junction diode?
 A. Forward biasing
 B. Reverse biasing
 C. Unbiased
 D. Doping
- 159.** The energy difference per unit frequency between two consecutive quantum states is
 A. speed of light
 B. Frequency
 C. Planck's Constant
 D. Mass
- 160.** What is the primary reason for color line spectrum of hydrogen gas?
 A. the heat energy inside gas
 B. Transition of electrons from lower to higher energy levels in gas atoms
 C. Transition of electrons from higher to lower energy levels in gas atoms
 D. instability of gas atoms
- 161.** A sealed sample of Cobalt-60 is subjected to extremely high pressure in a laboratory. Its decay rate will:
 A. increase
 B. decrease
 C. remain unchanged
 D. become infinite
- 162.** Half-life of a radioactive element is 2 minutes. In how much time, one-eighth ($1/8$ th) of this sample will decay?
 A. 2 minutes
 B. 4 minutes
 C. 6 minutes
 D. 8 minutes

ENGLISH

- 163.** Choose the option with correct spelling.
 A. Nusance
 B. Neusance
 C. Nuisance
 D. Nuissance

- 164.** Choose the correctly structured sentence.
 A. If he went on time, he will have caught the bus.
 B. If he had gone on time, he would have caught the bus.
 C. If he had gone on time, he would catch the bus.
 D. If he has gone on time, he would have caught the bus.
- 165.** "The students, along with their teacher, _____ leaving now." Choose the correct verb:
 A. is
 B. are
 C. has
 D. was
- 166.** "Your reluctance to speak to the boss will create problems for you." What does "reluctance" mean in this context?
 A. Confidence
 B. Hesitation
 C. Eagerness
 D. Competence
- 167.** "The silence tasted like stale bread left too long in the cupboard." Which literary technique is most evident here?
 A. Metaphor
 B. Personification
 C. Simile
 D. Alliteration
- 168.** Choose the sentence with correct punctuation:
 A. "It was a nice movie," said Kaleem.
 B. "it was a nice movie, said Kaleem.
 C. "It was a nice movie;" said Kaleem.
 D. "It was a nice movie, "said Kaleem".
- 169.** "He walked _____ the park to reach school." Use correct preposition:
 A. across
 B. at
 C. over
 D. on
- 170.** Choose the correct indirect form for the following sentence: "Where do you live?" he asked the old man.
 A. He asked the old man where he has lived.
 B. He asked the old man where do I live.
 C. He asked the old man where he lived.
 D. He asked the old man where did he live.
- 171.** Complete the sentence with correct infinitive. He bade them _____ the house.
 A. for leaving
 B. Leave
 C. leaving
 D. To leave

LOGICAL REASONING

- 172.** If 5 is subtracted from 30, what will be the square root of remaining?
A. 25
B. 30
C. 5
D. 10
- 173.** Statement: A hospital staff shortage is causing long patient waiting times.
Course of Action:
I. Hire temporary staff and reschedule duties to manage the patient's workflow.
II. Close the hospital until full staffing is restored.
A. Only I follows
B. Only II follows
C. Both I and II follow
D. Neither follows
- 174.** What makes a course of action realistic and executable?
A. Minimal risk
B. Attainable goals, detailed steps, and availability of appropriate resources
C. High expenses
D. Unclear execution plans
- 175.** How does positive thinking influence social behavior?
A. It encourages social conflicts among the people.
B. It encourages mutual respect among the people.
C. It develops self-centeredness among the people.
D. It encourages isolation among the people.
- 176.** In how many way(s), four persons A, B, C and D can stand in a line, if B must be at first and D is at third position?
A. 1
B. 2
C. 3
D. 4
- 177.** Eman has 4 times as many books as Ayesha and 5 times as many as Khadijah. If Khadijah has more than 40 books, what is the least number of books that Eman could have?
A. 200
B. 205
C. 210
D. 220
- 178.** Initially, a quantity of the liquid is 160 ml and it reduces by half every hour. How much liquid remains after two hours?
A. 20 ml
B. 40 ml
C. 60 ml
D. 80 ml
- 179.** An item originally costs Rs. 2500. After a 10% price increase, what is the new price?
A. Rs. 2250
B. Rs. 2700
C. Rs. 2750
D. Rs. 2800
- 180.** If you work hard, you will pass the exam. Which of the following statements can be deduced from the above statement?
I: If you don't work hard, you will not pass the exam.
II: If you don't pass the exam, you have not worked hard.
A. only I
B. only II
C. both I and II
D. neither I nor II