

SZABMU Official Paper 2026 – Paper Code 2

Total Marks : 180**Time Allowed : 180 Minutes**

BIOLOGY

1. The axon of motor neuron forms synapses with _____?

- A. Axon of sensory neuron
- B. Dendron of sensory neuron
- C. Receptors
- D. Muscle cells/effector

2. Which part of the brain stores human memory?

- A. Cerebrum
- B. Medulla oblongata
- C. Hypothalamus
- D. Corpus callosum

3. 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

4. Which one of the following is involved in blinking of an eye?

- A. Spinal reflex
- B. Cranial reflex
- C. Membrane reflex
- D. Nuclear reflex

5. Brain stem include all of the following, Except.

- A. Cerebrum
- B. Pons
- C. Midbrain
- D. Medulla Oblongata

6. All enzymes are _____ proteins?

- A. Globular & insoluble in water
- B. Globular & soluble in water
- C. Fibrous & insoluble in water
- D. Fibrous & soluble in water

ANSWER KEY

1-D • 2-A • 3-C • 4-B • 5-A • 6-B

7. A marked increase in temperature reduces rate of the enzyme catalyzed reaction by -----.

- A. Decreasing the kinetic energy of substrate
- B. Changing the pH of reaction media
- C. Destroying the tertiary structure of enzyme
- D. Decreasing the activation energy

8. Which model best explains the specificity of enzymes for their substrate?

- A. Induced fit model
- B. Lock and Key model
- C. Fluid mosaic model
- D. Sliding filament model

9. Which of the following truly describe the Activation Energy of an Enzyme?

- A. Total energy of the reaction system
- B. Minimum energy required to start a chemical reaction
- C. Energy lost during the chemical reaction
- D. Energy difference between the chemical potential energy of the reactants and the products

10. How does an enzyme increase the rate of a reaction?

- A. By bringing the reaction molecules into precise orientation
- B. By increasing the rate of random collisions of molecules
- C. By shifting the point of equilibrium of the reaction
- D. By supplying the energy required to start the reaction

11. Naturally, enzymes increase reaction rate without:

- A. Converting substrate into products
- B. Being consumed in reaction
- C. Lowering its activation energy
- D. Forming enzyme-substrate complex

12. Darwin believed in perceived unity of life with ----- related though decent from -----.

- A. all organisms: common ancestors
- B. few organisms: different ancestors
- C. few organisms: common ancestors
- D. all organisms: different ancestors

**ANSWER
KEY**

7-C • 8-B • 9-B • 10-A • 11-B • 12-A

13. In Darwin's theory of natural selection "struggle for existence" is:

- A. Fight for territory
- B. Competition for survival
- C. Fight for evolution
- D. to admit the rights of others

14. History of life is like a tree. This concept of Darwinism is called:

- A. Natural selection
- B. Descent with modification
- C. Struggle for existence
- D. over production

15. A researcher claims that environment directly induces useful traits in organisms, that are inherited in next generations. This idea aligns with:

- A. Lamarckism
- B. Darwinism
- C. Special creationism
- D. Neo-Darwinism

16. The first menstrual flow is:

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

17. The ceasation (end) of mensuration in female is called

- A. Menarche
- B. Mensural cycle
- C. Menopause
- D. Maturation

18. A sudden rise in estrogen levels in females, may leads to which event?

- A. Menstruation
- B. LH surge
- C. Implantation
- D. Progesterone drop

**ANSWER
KEY**

13-B • 14-B • 15-A • 16-C • 17-C • 18-B

19. 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?

- A. FSH
- B. LH
- C. Progesterone
- D. Both LH and FSH

20. Nerve impulse carried directly to sarcoplasmic reticulum through?

- A. Sarcolemma
- B. Sarcoplasm
- C. Nerve fibre
- D. T-tubule

21. During muscle contraction, after calcium binds to troponin, the binding sites on which protein become exposed?

- A. Actin
- B. Myosin
- C. Myoglobin
- D. Tropomyosin

22. Osteoarthritis indicates inflammation in the joints of _____.

- A. Toes
- B. Neck
- C. Knee
- D. Wrist

23. Which of the following changes occur when skeletal muscles contract?

- A. The A- bands shorten
- B. The I- Bands shorten
- C. The Z- lines move further apart
- D. The H- zone becomes more visible

24. 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

**ANSWER
KEY**

19-C • 20-D • 21-A • 22-C • 23-B • 24-C

25. _____ are the bone dissolving cells.

- A. Osteoclasts
- B. Osteocytes
- C. Osteoblasts
- D. All of these are correct

26. Which of the following is NOT a feature of cartilaginous joints?

- A. Slight mobility
- B. Absence of synovial fluid
- C. Presence of cartilage
- D. Presence of joint cavity

27. When male parent (RR) has a cross with female parent (rr), then according to Law of segregation all F1 offspring appears with a genotype:

- A. RR
- B. Rr
- C. rr
- D. Rrr

28. Which of the following genetic disorder causes bleeding disease?

- A. Sickle Cell anemia
- B. Hemophilia
- C. Thalassemia
- D. Cystic fibrosis

29. Y- linked traits are always passed from father to the:

- A. Sons only
- B. Daughters only
- C. 50% sons and 50% Daughters
- D. 75% sons and 25% daughter

30. How many different genotypes are required for producing a pea plant with round and yellow seeds phenotype?

- A. 1
- B. 2
- C. 4
- D. 8

**ANSWER
KEY**

25–A • 26–D • 27–B • 28–B • 29–A • 30–C

31. In which of the following phases of cell cycle, gene crossing over occurs?

- A. Telophase
- B. Prophase I
- C. Metaphase I
- D. Prophase II

32. 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?

- A. Segregation
- B. Sex Linkage
- C. Crossing Over
- D. Independent Assortment

33. A genetic disease is transferred from a phenotypically normal but carrier female to only some of male progeny. The disease is:

- A. Autosomal dominant
- B. Autosomal recessive
- C. Sex-linked dominant
- D. Sex-linked recessive

34. Which chamber of the heart pumps blood to the lungs?

- A. Right Atrium
- B. Right Ventricle
- C. Left Atrium
- D. Left Ventricle

35. Which one of the following statements is incorrect about circulatory system?

- A. All arteries carry blood away from the heart.
- B. All veins carry blood towards the heart.
- C. All arteries carry oxygenated blood.
- D. All veins carry blood at low pressure.

36. Which of the following valves control the entry of blood into the ventricles of a heart?

- A. Artioventricular valves
- B. Semilunar valves
- C. Pulmonary valves
- D. Aortic valves

**ANSWER
KEY**

31-B • 32-D • 33-D • 34-B • 35-C • 36-A

37. The valve of heart through which only oxygenated blood move is _____.

- A. Tricuspid
- B. Bicuspid
- C. Pulmonary semilunar
- D. Bicuspid and Tricuspid

38. 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

39. 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

40. Antigens bind with:

- A. C-Region of antibody
- B. V- Region of antigens
- C. C- Region of antigens
- D. V- Region of antibody

41. Constant region of a specific type of antibody is made up of type of amino acids.

- A. Same
- B. Different
- C. Variable
- D. Hydrophobic

42. 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

**ANSWER
KEY**

37-B • 38-D • 39-C • 40-D • 41-A • 42-B

43. Breathing is also named as?

- A. Internal respiration
- B. Cellular respiration
- C. Inspiration
- D. Ventilation

44. 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

45. Intercostal muscles are _____?

- A. Skeletal muscles
- B. Involuntary smooth muscles
- C. Voluntary smooth muscles
- D. Cardiac muscles

46. 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

47. During gaseous exchange in human, how many times, cells membranes of different cells are crossed by oxygen molecule from alveolar air to reach in the RBC in alveolar capillaries

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

48. The pepsin is converted into active form by the action of:

- A. Trypsin
- B. Chymotrypsin
- C. Acidic medium
- D. Alkaline medium

**ANSWER
KEY**

43-D • 44-A • 45-A • 46-D • 47-D • 48-C

49. 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

50. Which component of bile produced by liver may cause gall stones?

- A. Iron
- B. Bilirubin
- C. Cholesterol
- D. Lipase

51. 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

52. How does pancreatic amylase digests carbohydrates?

- A. Digests polysaccharides into maltose
- B. Digests polysaccharides into sucrose
- C. Digests polysaccharides into lactose
- D. Digests polysaccharides into galactose

53. Which of the following event would likely to 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

54. Which process directly depends on hydrostatic pressure in the kidney functioning?

- A. Pressure Filtration
- B. Selective Reabsorption
- C. Tubular Secretion
- D. Osmoregulation

**ANSWER
KEY**

49-A • 50-C • 51-C • 52-A • 53-C • 54-A

55. Hypercalcemia & Hypercalciuria are responsible for kidney stones and are due to condition:

- A. Hypothyroidism
- B. Hyperthyroidism
- C. Hypoparathyroidism
- D. Hyperparathyroidism

56. In situation of dehydration, human kidneys respond by:

- A. Decreasing blood pressure
- B. Decreasing ADH secretion
- C. Increasing water reabsorption
- D. Increasing urine output

57. Which of the following is not the function of kidney?

- A. Ion regulation
- B. Water regulation
- C. Temperature regulation
- D. Waste removal

58. An increased aldosterone secretion results in _____.

- A. Loss of Na ions
- B. Retention of Na ions
- C. Increased glucose
- D. Reduced urine

59. When monoclonal antibodies are combined with fluorescent labels, this technique is known as:

- A. Fluorescence microscopy
- B. Fluorescence crystallography
- C. Fluorescence therapy
- D. Fluorescence biography

60. The enzyme which joins two pieces of DNA is:

- A. DNA Polymerase I
- B. DNA Polymerase III
- C. DNA Ligase
- D. Restriction Endonuclease

**ANSWER
KEY**

55-D • 56-C • 57-C • 58-B • 59-A • 60-C

61. DNA probes are best described as:

- A. Enzymes that cut DNA
- B. Short, single-stranded DNA sequences complementary to target DNA
- C. Double-stranded RNA molecules
- D. Antibodies that bind proteins

62. The shape of a bacteriophage is:

- A. Spherical
- B. Helical
- C. Tadpole like
- D. Comma like

63. In the host Helper-T lymphocytes, the viral RNA is converted into cDNA by

-
- A. Transcriptase
 - B. RNA polymerase
 - C. DNA polymerase
 - D. Reverse transcriptase

64. The virus responsible for AIDS is classified as:

- A. DNA virus
- B. Retrovirus
- C. Viroid
- D. Bacteriophage

65. Which of the following best defines the removal of electrons from a substance by the addition of oxygen or removal of hydrogen.

- A. Oxidation
- B. Reduction
- C. Phosphorylation
- D. Dephosphorylation

66. Which of the following is a major benefit of anaerobic respiration during exercise in humans?

- A. Glucose molecules are fully oxidised during anaerobic respiration.
- B. Anaerobic respiration can supply ATP very rapidly for a short period of time.
- C. It produces useful byproducts.
- D. Anaerobic respiration can supply ATP indefinitely.

**ANSWER
KEY**

61-B • 62-C • 63-D • 64-B • 65-A • 66-B

67. Oxidation, decarboxylation and addition of coenzyme A to pyruvate results into the production of

- A. Acetyl Co-A
- B. Phosphoenolpyruvate
- C. Glucose 6-phosphate
- D. Citrate

68. The disaccharide formed during digestion of starch is:

- A. Sucrose
- B. Cellobiose
- C. Lactose
- D. Maltose

69. 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

70. 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

71. Water maintains the shape and structure of large biological molecules mainly through:

- A. Covalent bonding
- B. Hydrogen bonding and hydrophobic interactions
- C. Ionic interactions
- D. Disulfide bridges

72. The common feature(s) of prokaryotic and eukaryotic cells is/are _____.

- A. Presence of plasma membrane only
- B. Presence of ribosomes only
- C. Presence of genetic material only
- D. Presence of plasma membrane, ribosomes & genetic material

**ANSWER
KEY**

67-A • 68-D • 69-C • 70-A • 71-B • 72-D

73. Which of the following is biopolymer?

- A. Water
- B. Phospholipids
- C. Histone
- D. Waxes

74. Information regarding living organism's body processes from construction of body structure to flow of information from nucleus are provided by:

- A. Biogenic elements
- B. Biological molecules
- C. Inorganic molecules
- D. Organic molecules

75. 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

76. In which of the following organelles, the process of Transcription takes place?

- A. Ribosomes
- B. Golgi complex
- C. Lysosomes
- D. Nucleus

77. The approximate diameter of chromatin at the level of supercoiling is

- A. 250nm
- B. 300nm
- C. 350nm
- D. 400nm

78. Which of the following organelles predominantly produces Adenosine Triphosphate (ATP) in the cell?

- A. Nucleus
- B. Ribosome
- C. Mitochondria
- D. Endosome

**ANSWER
KEY**

73–C • 74–B • 75–B • 76–D • 77–B • 78–C

79. 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

80. Which organelle is in abundance in secretory cells?

- A. Mitochondria
- B. Golgi complex
- C. Nuclei
- D. Nucleoli

81. Olfactory bulb is present in:

- A. Nose
- B. Nasal Cavity
- C. Throat
- D. Brain

CHEMISTRY

82. If the temperature of a gas is doubled at constant pressure, what will be its volume:

- A. Halved
- B. Doubled
- C. Remains constant
- D. Quadrupled

83. Which pair of compounds form hydrogen bond?

- A. Water and acetaldehyde
- B. Formic acid and acetic acid
- C. Ethyl acetate and acetic acid
- D. Acetone and water

84. In body centered crystal system the central ion is attach with,

- A. 1 unit cell
- B. 4 unit cell
- C. 6 unit cell
- D. 10 unit cell

ANSWER KEY

79-B • 80-B • 81-D • 82-B • 83-B • 84-A

85. For an endothermic reversible reaction, the yield will increase if

- A. Temperature increased
- B. Temperature decreased
- C. Catalyst added
- D. Reactants removed

86. Methanol is manufactured by reacting carbon dioxide and hydrogen.



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.

87. The order of reaction of an elementary reaction is:

- A. Equal to molecularity
- B. Depend on temperature
- C. Can't predicted
- D. Depends on concentration

88. The rate of reaction when concentration becomes unity is called

- A. Average rate
- B. Instantaneous rate
- C. Rate constant
- D. Rate of reaction

89. If enthalpy change of a reaction is negative, then by increasing temperature reaction will move in which direction?

- A. Forward
- B. Reverse
- C. No change
- D. First reverse then forward

90. 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

**ANSWER
KEY**

85-A • 86-D • 87-A • 88-C • 89-B • 90-A

91. In a redox reaction, the reducing agent is the species that:

- A. Gains electrons
- B. Loses electrons
- C. Remains unchanged
- D. decrease in its oxidation state

92. The surface of Triton, a moon of Neptune, contains condensed methane that flows rapidly. Which statement explains why condensed methane flow 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

93. Which of the following statement 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 decreases on cooling

94. Number of sigma bond and pi bonds in acetylene are?

- A. 3 & 1
- B. 1 & 3
- C. 5 & 2
- D. 3 & 2

95. Which compound will have a maximum dipole moment?

- A. CH_4
- B. CCl_4
- C. CH_3Cl
- D. C_2H_4

96. Which of the following elements has the lowest electronegativity value?

- A. Flourine
- B. Iodine
- C. Lithium
- D. Cesium

**ANSWER
KEY**

91-B • 92-C • 93-C • 94-D • 95-C • 96-D

97. Sodium metal reacts with Ice cold water to produce:

- A. NaOH
- B. Na_2O
- C. Na_2O_2
- D. NaCl

98. Outer-Transition elements are also called;

- A. s-block elements
- B. p-block elements
- C. d-block elements
- D. f-block elements

99. Those molecules which have chiral center but not mirror image of one another is called

- A. Epimers
- B. Enantiomers
- C. Diastereomers
- D. Anomers

100. Select free radical involved in initiation of halogenation of methane

- A. Cl
- B. CH_3
- C. CH_4
- D. CH_3Cl

101. Alkenes are less acidic than alkynes due to

- A. Higher s character
- B. Lesser s character
- C. Stronger bonds
- D. Higher electronegativity

102. 1,3 Butadiene is more stable than 1-Butene, because it is a:

- A. Conjugated Alkene
- B. Cumulenes
- C. Isolated diene
- D. Separated dienes

103. Name of $(\text{C}_2\text{H}_5)_4\text{C}$

- A. Triethyl methane
- B. Tetramethyl methane
- C. Tetraethyl methane
- D. Trimethyl ethane

**ANSWER
KEY**

97-A • 98-C • 99-C • 100-A • 101-B • 102-A • 103-C

104. Free radicals are produced by

- A. Homolytic cleavage
- B. heterolytic cleavage
- C. reducing agents
- D. Oxidizing agents

105. Compared to benzene, nitration of toluene takes place at?

- A. Same rate
- B. Slow rate
- C. Faster rate
- D. Very slow rate

106. During Hydro halogenation 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

107. Which reagent is used to distinguish 1-butyne and 2-butyne

- A. water in the presence of mercuric sulphate and sulfuric acid
- B. ammonical silver nitrate
- C. Acidified potassium manganate(VII)
- D. aqueous bromine

108. _____ 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. Amine.

109. Which reagent gives white precipitates when added to phenol

- A. aq bromine
- B. aq Na_2CO_3
- C. aq NaOH
- D. aq NaOH and benzoyl chloride

**ANSWER
KEY**

104–A • 105–C • 106–C • 107–B • 108–B • 109–A

110. Which of the following is more acidic?

- A. Phenol
- B. o-methyl phenol
- C. o- nitro phenol
- D. o-Aminophenol

111. 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)

112. Which of the following gives positive silver mirror test:

- A. $\text{CH}_3\text{CH}_2\text{OH}$
- B. CH_3CHO
- C. CH_3COOH
- D. CH_3COCH_3

113. 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

114. When an aldehyde or ketone is reduced using LiAlH_4 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.

115. Acetic acid and ethanol reacts to produce

- A. Aldehyde
- B. Ethyl acetate
- C. Nitrile
- D. Ketone

**ANSWER
KEY**

110-C • 111-B • 112-B • 113-C • 114-B • 115-B

116. Prosthetic groups are part of the following _____ protein

- A. Derived
- B. Conjugated
- C. Simple
- D. Non-derived

117. Acrylate base polymers are:

- A. Drying adhesives
- B. Pressure sensitive adhesives
- C. Contact adhesives
- D. Hot adhesives

118. What does the symbol (Δ) in a chemical equation represent?

- A. Density
- B. Direction
- C. Heat
- D. Pressure

119. Calculate the number of molecules in 244g of Benzoic acid? ($C_7H_6O_2$)

- A. 12×10^{23}
- B. 1.2×10^{24}
- C. 0.12×10^{31}
- D. 12×10^{24}

120. 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

121. An ion with a trinegative charge (-3) has valence shell electronic configuration of $1s^2 2s^2 2p^6 3s^2 3p^6$. To which period and group of the periodic table does the given element belong?

- A. Period III and Group IIIA
- B. Period III and Group VA
- C. Period V and Group IIIA
- D. Period V and Group VA

**ANSWER
KEY**

116–B • 117–B • 118–C • 119–B* • 120–C • 121–B

MCQ#119: Both option A and B are correct but we prefer option B Because it is the standard scientific notation.

122. For an element "X", If the value of Principle quantum number (n) = 4, the largest value of magnetic quantum number "m" can be:

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

123. A photon is moving with wave number $1.5 \times 10^{10} \text{ m}^{-1}$. its frequency is

- A. 4.5×10^{18}
- B. 3.0×10^{18}
- C. 4.5×10^{-18}
- D. 3.0×10^{-18}

124. Ideal gas equation for one mole of H_2 is

- A. $PV = nRT$
- B. $P_1V_1/T_1 = P_2V_2/T_2$
- C. $PV/RT = 1$
- D. $P_1V_2T_2 = P_2V_1T_1$

125. Value of concentration for 1 mol of an ideal gas at STP will be:

- A. 0.04
- B. 0.4
- C. 4.4
- D. 4

126. The ideal gas equation is a combination of _____ laws.

- A. Charles's, Boyle's
- B. Charles's, Avogadro's
- C. Boyle's, Avogadro's
- D. Charles's, Boyle's, Avogadro's

PHYSICS

127. In SHM the maximum displacement covered by the Particle from mean position is

A. What is the total distance covered in one complete cycle?

- A. $2A$
- B. $4A$
- C. $6A$
- D. $8A$

ANSWER KEY

122-C • 123-A • 124-C • 125-A • 126-D • 127-B

128. 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

129. 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

130. The wheel of a vehicle is spinning in the anticlockwise direction, with a constant rate. The direction of its angular velocity will be:

- A. clockwise
- B. anticlockwise
- C. perpendicular to the plane of rotation
- D. along the plane of rotation

131. 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)?

- A. It remains the same
- B. It triples
- C. It is reduced to one-third
- D. It increases by factor 9

132. In deriving Bernoulli's equation, the quantity 'pressure x volume' represents:

- A. density
- B. kinetic energy
- C. potential energy
- D. work done

133. Drag force on a spherical object moving through a fluid depends on

- A. velocity of the object
- B. viscosity of the medium
- C. shape and size of the object
- D. all of the above

**ANSWER
KEY**

128–C • 129–C • 130–C • 131–B • 132–D • 133–D

134. Which of the following assumptions is INCORRECT about the fluid that follows equation of continuity?

- A. It is a non-viscous fluid
- B. It moves in a steady flow
- C. It moves in a turbulent flow
- D. It is an incompressible fluid

135. 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:

- A. 5 Hz
- B. 10 Hz
- C. 40 Hz
- D. 50 Hz

136. Unlike electromagnetic waves mechanical waves require:

- A. source of energy
- B. medium for propagation
- C. source of disturbance
- D. periodic motion

137. 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?

- A. longitudinal and progressive
- B. longitudinal and stationary
- C. transverse and progressive
- D. transverse and stationary

138. An ideal gas is heated at constant volume. It absorbs 200 J of heat. The work done by the gas is:

- A. 200 J
- B. 0 J
- C. -200 J
- D. Varies with pressure

139. If "Q" heat and "W" is work done then "W=Q" represents.

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

**ANSWER
KEY**

134-C • 135-C • 136-B • 137-B • 138-B • 139-A

140. 1 mega ohm x 1 pico farad =

- A. second
- B. milli second
- C. micro second
- D. mega second

141. If "F" is the force between two points charges submerged in a medium of dielectric constant "M", then on withdrawing the medium, the force between them becomes:

- A. $F \sqrt{M}$
- B. $F M$
- C. F/M
- D. M/F

142. Unit of resistivity i.e. specific resistance is:

- A. $\Omega \text{ m}$
- B. Ω
- C. $\Omega^{-1} \text{ m}^{-1}$
- D. $\Omega \text{ m}^2$

143. If diameter of a wire is doubled, its resistivity will:

- A. become half
- B. decrease by four times
- C. increases by four times
- D. remain constant

144. Two particles with same charge and different masses enters 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

145. Which quantity is a vector?

- A. pressure
- B. temperature
- C. weight
- D. work

**ANSWER
KEY**

140–C • 141–B • 142–A • 143–D • 144–D • 145–C

146. 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. $v = \omega \times r$

147. Cross product of two parallel vectors has a magnitude:

- A. A
- B. $\text{Acos}\theta$
- C. zero
- D. null vector

148. 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

149. A body of mass 5kg is moving with speed 10 m/s. A constant force acts on it for 5 seconds and brings it speed to 5 m/s. The magnitude of force is:

- A. 3 N
- B. 5 N
- C. 15 N
- D. 30 N

150. 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

151. A stone is thrown horizontally with a velocity of 12 m/s from the top of a vertical cliff. How long stone takes 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

**ANSWER
KEY**

146-D • 147-C • 148-C • 149-B • 150-A • 151-B

152. 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

153. Magnetic flux has unit but no direction because

- A. of scalar product
- B. of cross product
- C. of sum of two vectors
- D. of product of two scalars

154. According to the Faraday's law of electromagnetic induction, the magnitude of induced emf depends upon:

- A. magnetic flux
- B. magnetic induction
- C. change in magnetic flux
- D. rate of change in magnetic flux

155. Lenz's law primarily refers to the direction of:

- A. Voltage
- B. Induced current
- C. Power
- D. Energy

156. When a capacitor is connected to an alternating power source,

- A. the voltage leads the current by 90°
- B. the voltage lags the current by 90°
- C. the voltage leads the current by 180°
- D. 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

**ANSWER
KEY**

152–B • 153–A • 154–D • 155–B • 156–B • 157–C

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 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".

ANSWER KEY

158-B • 159-C • 160-C • 161-C • 162-C* • 163-A

MCQ#162: The question probably meant "1/8th of the sample is left behind". Keeping that in view, C is the right option.

164. "He walked _____ the park to reach school." Use correct preposition:

- A. across
- B. at
- C. over
- D. on

165. 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.

166. Complete the sentence with correct infinitive. He bade them _____ the house.

- A. For leaving
- B. Leave
- C. leaving
- D. To leave

167. Choose the option with correct spelling.

- A. Nulance
- B. Neusance
- C. Nuisance
- D. Nuissance

168. 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.

169. "The students, along with their teacher, _____ leaving now." Choose the correct verb:

- A. is
- B. are
- C. has
- D. was

**ANSWER
KEY**

164–A • 165–C • 166–B • 167–C • 168–B • 169–B

170. "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

171. "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

LOGICAL REASONING

172. 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

173. 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

174. 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

ANSWER KEY

170-B • 171-C • 172-B • 173-C • 174-B

175. If 5 is subtracted from 30, what will be the square root of remaining?

- A. 25
- B. 30
- C. 5
- D. 10

176. 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 workload.

II. Close the hospital until full staffing is restored.

- A. Only I follows
- B. Only II follows
- C. Both I and II follows
- D. Neither follows

177. 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

178. 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.

179. 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

180. 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

**ANSWER
KEY**

175-C • 176-A • 177-B • 178-B • 179-B • 180-D