2025/11

SET A

M.Sc. ZOOLOGY
THIRD SEMESTER
CELL AND MOLECULAR BIOLOGY-I
MSZ-303(A)

[USE OMR FOR OBJECTIVE PART]

Duration: 1.30 hrs. **Full Marks: 35**

Objective

Time: 15 min. **Marks: 10**

Choose the correct answer from the following: *1X10=10*

1. Membrane proteins that are covalently attached to lipids and located only on one side of the bilayer are called
   a. Integral proteins
   b. Peripheral proteins
   c. Lipid-anchored proteins
   d. Transmembrane proteins

2. What is the function of tight junctions in epithelial cells?
   a. Separation of fluids
   b. Biocatalyst to enzymes
   c. Protection
   d. Support and structure

3. The term "genome" refers to:
   a. All proteins in a cell
   b. All chromosomes in a species
   c. The complete DNA sequence of an organism
   d. All RNA molecules of a cell

4. What is a common consequence of lipid peroxidation in cell membranes
   a. Increased membrane fluidity
   b. Enhanced cell signaling
   c. Cell membrane damage and potential cell death
   d. Decreased membrane permeability

5. Termination of lipid peroxidation occurs when:
   a. Lipid peroxides are hydrolysed
   b. Oxygen concentration increases
   c. Two radicals combine to form a non-radical
   d. pH decreases

6. Which is the largest family of transporter proteins?
   a. ABC transporters
   b. H+ Pumps
   c. Na+/K+ ATPase Pumps
   d. Ion Channels.

7. What is the primary focus of proteomics?
   a. To identify and sequence all the genes present in the human body
   b. To introduce new genes to human beings
   c. To identify, quantify, and functionally analyze proteins
   d. To remove disease-causing genes from humans

8. Which term describes the plasma membrane's ability to allow certain substances to pass through but not others?
   a. Permeability
   b. Semi-permeability
   c. Selective permeability
   d. Impermeability

9. Which of the following is a false statement about genes?
   a. Genes are segments of DNA
   b. Genes are the basic units of heredity
   c. Genes are passed from parents to offspring
   d. None

10. Which of the following is an example of an active transport mechanism?
   a. Simple diffusion
   b. Osmosis
   c. Facilitated diffusion
   d. The sodium-potassium pump

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Descriptive

Time : 1 hrs. 15 min. **Marks : 25**

[Answer question no.1 & any two (2) from the rest]

1. Describe with diagram the fluid mosaic model of plasma membrane. **5**

2. Describe in details the passive transport methods cell membrane. Mention the differences between osmosis and diffusion. **8+2=10**

3. What is lipid peroxidation? How does it take place in the cell membrane **2+8=10**

4. **Write a short note on:** a) Genome b) Proteome **5+5=10**

5. What is genomics? How does genomics differ from genetics? What are the applications of genomics in medicine? **2+6+2=10**

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