Paper ID : 250364

Roll No: | | | | | | | | | | | | | |

BPHARM
(SEM VIII) THEORY EXAMINATION 2024-25
CELL AND MOLECULAR BIOLOGY

TIME: 3 HRS **M.MARKS: 75**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **10 x 2 = 20**

a.	What is DNA replication?
b.	What is protoplasm theory?
c.	Difference between translation and transcription.
d.	What is the primary function of protein kinases in cell signaling pathways?
e.	What is the basic unit of heredity in genetics? At which checkpoint does the cell verify DNA replication before entering mitosis?
f.	State two main functions of the cell membrane.
g.	Name and define two types of chemical reactions important in cellular processes.
h.	Name the four levels of protein structure and which level determines the protein's final 3D shape.
i.	What are the two types of RNA involved in protein synthesis? What is their role?
j.	Define gene mutation.

SECTION B

2. Attempt any *two* parts of the following: **2 x 10 = 20**

a.	Define cell division. Describe the phases of mitosis and meiosis with labeled diagrams. Also, differentiate between mitosis and meiosis.
b.	Define cell signaling and cell signaling pathways. Describe the signal transduction mechanisms of signaling receptors and explain the key steps involved in a typical signaling pathway, highlighting its biological significance.
c.	Define RNA and classify its types. Describe the structure, composition, and functions of different types of RNA, and explain the process of RNA biosynthesis and translation.

SECTION C

3. Attempt any *five* parts of the following: **7 x 5 = 35**

a.	Describe the structure and functions of the cell membrane. Differentiate between active and passive transport, and explain the mechanisms involved in each process.
b.	Differentiate between Prokaryotic and Eukaryotic cells.
c.	What is the chromosomal theory of inheritance? Discuss its main principles and significance in understanding genetic inheritance.
d.	Discuss the various applications of cell and molecular biology in fields such as medicine, agriculture, and biotechnology.
e.	Describe the structure of proteins, outlining the four levels of protein structure and explaining how each level contributes to the protein's overall function.
f.	What is the function of regulatory genes, and how do they influence gene expression in cellular processes?
g.	Discuss various genomic analysis techniques.