

Sr. No.....

January 2023

M.Sc. Botany/Zoology/Biotechnology/Microbiology - I SEMESTER

Cell Biology (MLS-101)

Time: 3 Hours

Max. Marks: 75

- Instructions:**
1. It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.
 2. Answer any four questions from Part -B in detail.
 3. Different sub-parts of a question are to be attempted adjacent to each other.

PART -A

- Q1 (a) What is meant by the term dynamic instability? (1.5)
- (b) Write cell signaling and its types? (1.5)
- (c) Differentiate between transposons and retrotransposons along with examples. (1.5)
- (d) Discuss key functions of cytoskeleton in eukaryotic cells? (1.5)
- (e) What is London force in cell membrane? (1.5)
- (f) What is Donan Equilibrium? (1.5)
- (g) What is the role of cholesterol in cell membrane? (1.5)
- (h) What is the cell membrane permeability? (1.5)
- (i) What is antiport movement across the cell membrane? (1.5)
- (j) Define apoptosis? (1.5)

PART -B

- Q2 (a) Explain three types of cytoskeletal filaments which exist in eukaryotic cells in terms of composition, function and structure. (10)
- (b) Explain uniports, symports and antiports movement across the cell membrane? (5)
- Q3 (a) Write a note on packaging of phospholipids in cell membrane. (5)
- (b) Describe the steps between the binding of a ligand such as glucagon to a seven trans membrane receptor and activation of an effector such as adenylyl cyclase. How the response is normally attenuated? (10)
- Q4 (a) Explain molecular mechanism of secretory pathway. (5)
- (b) Describe the steps that occur as soluble secretory proteins moves from the RER to the side of a cell with the help of suitable diagrams. (10)
- Q5 (a) Write the factors responsible for the programmed cell death? (5)
- (b) Describe embryonic stem cells and their applications therapeutics. (10)
- Q6 (a) Explain the structure and organization of the cell membrane proteins? (10)

(b) Discuss the molecules responsible for the cytoplasmic pH maintenance in a cell? (5)

Q7 (a) Discuss different signaling molecules and their receptors. (10)

(b) Explain the Tumor suppressor genes. (5)