

Roll No: _____

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BSc-MSc Integrated Biochemistry, Semester VI Examination, 2024

Paper Title: Advanced Cell Biology
Paper Code: BBC DSE-06

Time: 3 h

Max Marks: 75

Note: This paper has 3 Sections, A, B, and C. Attempt all three sections. Answer all the questions in Section A, answer any two in Section B, and all questions in Section C, where each question has an internal choice.

Abbreviations Used: CLO- Course Learning Outcome, PLO- Program Learning Outcome, BTL- Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create.

Section A

Attempt All Questions
(1x15=15 Marks)

Q No. 1 (a)	OBJECTIVE TYPE QUESTIONS (Fill in the blanks/True and False)	BTL	CLO	PLO
i.	Plasma membrane is composed of lipids, proteins, and also carbohydrates. Which among them always faces outwards?	2	2	3
ii.	Cry-scanning electron microscopy determine the supramolecular organization of cell surface molecules. (True/False?)	2	2	3
iii.	Give the basic principle of immunohistochemistry.	4	5	2
iv.	 % CO ₂ is usually used in animal cell culture technique.	4	4	3
v.	How do proteins get into the Endoplasmic reticulum?	1	3	2
vi.	What is meant by SRP in signal hypothesis?	3	3	3
vii.	What is SNARE?	2	4	3
viii.	What are Coat proteins?	4	2	3
ix.	What is cytoskeleton?	2	2	3
x.	What is meant by Cell polarization, why it happens?	2	2	3
xi.	Give the composition of the plant cell wall.	2	3	1
xii.	Why the G ₁ phase is the most variable stage of cell cycle?	1	4	2

xiii.	Define hematopoiesis.	2	2	3
xiv.	Define the role of cyclins.	3	1	4
xv.	Define cytosol. How does it differ from the cytoplasm.	2	4	3

Section B

Attempt any TWO out of four questions
(2x15=30 Marks)

Q No. 2	LONG ANSWER TYPE QUESTIONS	BTL	CLO	PLO
(a)	Give ultrastructure and functions of the nuclear pore complex.	3	2	3
(b)	How proteins are sorted after their synthesis in ER.	4	3	2
(c)	What is meant by Cell-Cell interactions? Describe different mechanisms explaining Cell-Cell interactions?	2	2	3
(d)	Describe in detail the phenomenon of Apoptosis and how it differs from Necrosis.	3	4	2

Section C

Attempt All questions
(6x5=30 Marks)

Q. No. 3	SHORT ANSWER QUESTIONS	BTL	CLO	PLO
(a)	Give the applications of Ultracentrifugation. OR Write in brief few steps involved in plant cell culture	2	3	5
(b)	What is meant by Receptor Mediated Endocytosis? OR Describe the mitochondrial protein targeting?	1	2	4
(c)	Explain the term Dynamics of Microtubules and give its utility? OR Give the structure and functions of collagen.	3	3	3
(d)	What are Stem Cells, give their clinical significance? OR How does a cancer cell differentiate from normal cells.	4	1	3
(e)	How and why cell migration takes place, give its significance? OR Describe in brief the steps involved in Meiosis	5	2	4
(f)	How Nuclear Protein Import and Export is regulated? OR Give an overview endomembrane system.	3	4	2

END OF THE QUESTION PAPER