

Roll No:

--	--	--	--	--	--	--	--	--	--

The Assam Royal Global University, Guwahati

Royal School of Biosciences

M. Sc. Biotechnology, 2nd Semester

Semester End Examination, June 2023

Course Title: Cell Biology

Course Code : BTC154C202

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.*The figures in the right-hand margin indicate marks.***Section – A**

1. Attempt **all** questions. (Maximum word limit 50) 2 x 8
- What is the most common method for disruption of cells?
 - What is endocytosis?
 - What are cell surface receptors? Give examples.
 - What are the different types of linked receptors?
 - State the functions of microtubules.
 - Mention the role of G₀ phase in cell cycle.
 - Mention the name of the hormone which is responsible for growth.
 - What do you understand by induced pluripotent stem cells?

Section – B

2. Attempt **any two** of the following: 6x2
- If the lysosome of a cell was dysfunctional, what would be the potential effect on the cell? Discuss.
 - What is cell membrane? Explain the chemical components present in the cell membrane.
 - What are the secretory vesicles? Explain how vesicle is formed from endoplasmic reticulum.
3. Attempt **any two** of the following: 7x2
- Explain the different types of receptors in cell signaling. How do receptors influence cell signaling?
 - Discuss briefly how different types of macromolecules are transported across the plasma membrane.
 - How protein targeting and translocation occurs after the synthesis of protein? Discuss.
4. Attempt **any two** of the following: 7x2
- What are proto-oncogenes and tumor suppressor genes? Explain how they contribute to cancer development.
 - After a retrovirus that does not carry an oncogene infects a particular cell, northern blots indicate that the amount of mRNAs transcribed from a particular proto-oncogene became elevated approximately 15 fold compared with uninfected control cells. Propose a hypothesis to explain the result.
 - In what ways can proto-oncogenes be converted to oncogenes with an emphasis on the cellular action and basis for oncogenicity through chromosomal translocation?
5. Attempt **any two** of the following: 7x2
- What are 'Stem Cells'? Mention the advantages and disadvantages of using of stem cells?
 - Elaborate the concept of adult stem cells. Briefly explain the different types of embryonic stem cells.
 - Define differentiation. Mention the major events during cell differentiation.