Reg. No | | | | | | | | | | |

AY 25

# Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
# (GIET UNIVERSITY)

M.Sc. (First Semester - Regular) Examinations, January – 2026

## 24MBIPC11002 – Cell and Molecular Biology

(Biotechnology)

Time: 3 hrs | Maximum: 60 Marks

**Answer ALL questions**

**(The figures in the right hand margin indicate marks)**

**PART – A** **(2 x 5 = 10 Marks)**

| Q.1. Answer ***ALL*** questions | CO # | Blooms Level |
|---|---|---|
| a. Define cell theory. | CO2 | K1 |
| b. What are the universal features of cells? | CO1 | K1 |
| c. Define passive transport. | CO3 | K1 |
| d. What is tRNA? | CO4 | K2 |
| e. What is a vesicular trafficking? | CO5 | K2 |

**PART – B** **(10 x 5 = 50 Marks)**

| Answer ***ALL*** the questions | Marks | CO # | Blooms Level |
|---|---|---|---|
| 2. a. Explain the fluid mosaic model of the cell membrane. | 5 | CO1 | K3 |
| b. Describe transcription in eukaryotes. | 5 | CO3 | K1 |
| (OR) | | | |
| c. Explain the stages of mitosis. | 5 | CO4 | K3 |
| d. Describe the chemical and internal organization of a eukaryotic cell. | 5 | CO3 | K3 |
| 3a. Explain the mechanism of protein trafficking from ER to Golgi to lysosomes. | 5 | CO3 | K4 |
| b. Describe the cell cycle and its regulation. | 5 | CO2 | K3 |
| (OR) | | | |
| c. Explain DNA replication, repair, and recombination. | 5 | CO3 | K3 |
| d. Describe cell culture principle. | 5 | CO4 | K3 |
| 4.a. Describe the relationship between cellular structure and molecular processes. | 5 | CO5 | K4 |
| b. Explain mutations and mutagens. | 5 | CO4 | K3 |
| (OR) | | | |
| c. Explain the steps of DNA replication in prokaryotes. | 5 | CO2 | K3 |
| d. Discuss semiconservative replication and the replication fork model. | 5 | CO2 | K2 |
| 5.a. Explain the process of translation with the help of a diagram. | 5 | CO4 | K3 |
| b. Describe the process of transcription. | 5 | CO3 | K2 |
| (OR) | | | |
| c. Write a note on point mutation and frameshift mutation. | 5 | CO6 | K3 |
| d. Write a note on p53 and RB genes. | 5 | CO6 | K3 |
| 6.a. Write a note on nuclear pore complex and protein transport through it. | 5 | CO4 | K3 |
| b. Write a note on cell-cell interaction. | 5 | CO6 | K3 |
| (OR) | | | |
| c. Describe the levels of chromatin packing in eukaryotic chromosomes. | 5 | CO2 | K3 |
| d. Explain the structure and functions of mitochondria and chloroplasts. | 5 | CO5 | K3 |

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