

B.Sc. Semester - 2 (NEP-2020) Examination**MARCH/APRIL-2026****BOT: Cell Biology (Multidisciplinary Course)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que. 1 Answer the following questions. (10)

- 1) Describe the evidences supporting the theory that explains the origin of eukaryotic cells from prokaryotic ancestors.
- 2) Trace the development of cell theory from its early formulation to its modern extensions.

OR

Que. 1 Answer the following questions.

- 1) Highlight the contributions of important scientists in the advancement of cell biology.
- 2) Explain in detail the stages of Prophase-II of meiosis with suitable diagrams.

Que. 2 Answer the following questions. (10)

- 1) Describe the mechanism and types of endocytosis with examples.
- 2) Classify membrane proteins and explain their structural and functional differences.

OR

Que. 2 Answer the following questions.

- 1) Explain the structural organization of the plant cell wall and discuss its biological significance.
- 2) Elaborate the fluid mosaic concept of plasma membrane and justify its acceptance.

Que. 3 Answer the following questions. (10)

- 1) Explain the structure and functions of endoplasmic reticulum.
- 2) Describe the structure of Golgi apparatus and explain its functional relationship with ER.

OR

Que. 3 Answer the following questions.

- 1) With the help of a labeled diagram, explain the ultrastructure of chloroplast and its functional compartments.
- 2) Discuss the structural organization of mitochondria and correlate it with its functions.

Que. 4 Answer the following questions. (10)

- 1) Discuss the structure and function of microfilaments in muscle contraction.
- 2) Write a detailed note on intermediate filaments and their cellular role.

OR

Que. 4 Answer the following questions.

- 1) Explain the structure and functional significance of the nuclear envelope.
- 2) Describe the molecular organization of microtubules and explain their role during cell division.

Que. 5 Answer the following questions. (10)

- 1) Differentiate between mitosis and meiosis with respect to mechanism and significance.
- 2) Define nucleolus and explain its structure and functions.

OR

Que. 5 Answer the following questions.

- 1) Explain the mechanism of ion transport across membranes and discuss the role of ion channels.
- 2) Describe the structure, types and functions of lysosomes.
