

B.Sc. Semester - 1 (CBCS) Examination
July-2025 (OLD COURSE)
BIO-TECHNOLOGY(CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

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

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- Que-1(A) Answer the following (Any one out of two) (07)**
- 1) Describe the current status and future prospects of biotechnology in developing countries.
 - 2) What is recombinant DNA technology? Explain its principle and applications.
- Que-1(B) Attempt any one (Out of two) (04)**
- 1) Explain the role of biotechnology in agriculture with suitable examples.
 - 2) What are the ethical concerns associated with biotechnology?
- Que-1(C) Attempt any three (Out of five) (03)**
- 1) The technique used to join DNA from two different sources is called _____.
 - 2) _____ biotechnology involves the use of living organisms to improve agriculture.
 - 3) Recombinant DNA technology is used only in medicine. (True/False)
 - 4) Biotechnology has no impact on the environment. (True/False)
 - 5) Define: Biotechnology.
- Que-2(A) Answer the following (Any one out of two) (07)**
- 1) Describe the ultrastructure and functions of a prokaryotic cell.
 - 2) Explain the origin and evolution of the cell and the concept of life.
- Que-2(B) Attempt any one (Out of two) (04)**
- 1) Compare the structure of plant, animal, and prokaryotic cells.
 - 2) Write a short note on the diversity of cell size and shape.
- Que-2(C) Attempt any three (Out of five) (03)**
- 1) The _____ is the fundamental unit of structure and function in living organisms.
 - 2) Viruses are considered _____ as they cannot reproduce without a host.
 - 3) Prokaryotic cells contain membrane-bound organelles. (True/False)
 - 4) The compound microscope is commonly used to study the ultrastructure of viruses. (True/False)
 - 5) Define: Cell Theory.
- Que-3(A) Answer the following (Any one out of two) (07)**
- 1) Describe the structure and functions of mitochondria and chloroplasts.
 - 2) Explain the structure and role of the plasma membrane.
- Que-3(B) Attempt any one (Out of two) (04)**
- 1) Differentiate between rough and smooth endoplasmic reticulum.
 - 2) What are glyoxisomes? Mention their structure and function.
- Que-3(C) Attempt any three (Out of five) (03)**
- 1) _____ is the double membrane-bound organelle responsible for energy production in eukaryotic cells.
 - 2) _____ are known as the protein factories of the cell.
 - 3) The Golgi apparatus is involved in protein synthesis. (True/False)
 - 4) Lysosomes contain hydrolytic enzymes used in intracellular digestion. (True/False)
 - 5) Define: Endoplasmic Reticulum.

- Que-4(A) Answer the following (Any one out of two) (07)**
- 1) Describe the structure and functions of the nucleus.
 - 2) Explain the stages of the cell cycle and how it is regulated.
- Que-4(B) Attempt any one (Out of two) (04)**
- 1) Compare mitosis and meiosis (any three differences).
 - 2) Write a short note on the ultrastructure of chromosomes.
- Que-4(C) Attempt any three (Out of five) (03)**
- 1) The phase of the cell cycle where DNA replication occurs is called the _____ phase.
 - 2) The basic structural and functional unit of chromosomes is the _____.
 - 3) Mitosis results in the formation of four genetically different daughter cells. (True/False)
 - 4) The nucleus is absent in mature red blood cells of mammals. (True/False)
 - 5) Define: Cell Cycle.
- Que-5(A) Answer the following (Any one out of two) (07)**
- 1) What are stem cells? Explain their types and potential applications.
 - 2) Describe the cellular basis of cancer and how it differs from normal cell division.
- Que-5(B) Attempt any one (Out of two) (04)**
- 1) Write a short note on amoeboid and flagellar locomotion.
 - 2) Briefly describe the importance of cell-cell interaction in multicellular organisms.
- Que-5(C) Attempt any three (Out of five) (03)**
- 1) _____ are protein filaments that form the cytoskeleton and help maintain the shape of the cell.
 - 2) _____ is a type of cellular locomotion characterized by the flow of cytoplasm inside the cell.
 - 3) Cilia and flagella are involved in cell movement. (True/False)
 - 4) Stem cells are terminally differentiated cells. (True/False)
 - 5) Define: Cytoskeleton.
