



# CBCS SCHEME

20BBI/BBC/BBT12

First Semester M.Tech. Degree Examination, Jan./Feb. 2021

## Concepts in Biotechnology

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. What are the different types of protein structures? (08 Marks)
- b. What are macromolecules? Explain the four major biological macromolecules with examples. (08 Marks)
- c. With a neat labeled diagram, explain briefly the fluid mosaic model of plasma membrane. (04 Marks)

OR

- 2 a. Nucleic acids are used to transfer and store genetic information. Justify. (10 Marks)
- b. Describe the carbohydrates chemistry and how is it a building block. (10 Marks)

### Module-2

- 3 a. Differentiate Mitotic and Meiotic cell division with neat labelled diagram. (10 Marks)
- b. With a neat sketch, explain polytene chromosomes. (05 Marks)
- c. Explain the functions of Endoplasmic reticulum with a neat sketch. (05 Marks)

OR

- 4 a. State the Mendelian law of inheritance with suitable example. (10 Marks)
- b. If both the alleles of a character are equally dominant, analyse the situation taking a case study. (10 Marks)

### Module-3

- 5 a. Explain the structure and classification of Bacteria. (07 Marks)
- b. Enumerate the methods of obtaining a single species of microorganism given a mixed culture. (07 Marks)
- c. Differentiate Innate and Adaptive immunity. (06 Marks)

OR

- 6 a. Certain microscopes use electrons to obtain images. Explain the working principles and applications with a neat labeled sketch. (10 Marks)
- b. What are immunoglobulins? Describe the classes and functions of each type. (10 Marks)

### Module-4

- 7 a. Microbes are used in manufacturing pesticides and fertilizers. Justify. (10 Marks)
- b. Metabolic engineering of plants has led to improve health and nutrition - uphold the statement. (10 Marks)

OR

- 8 a. What are genetically modified crops? What are the importance of GMO's. (07 Marks)
- b. Molecular farming is beneficial in production of edible vaccine - Explain the statement. (07 Marks)
- c. Flavonoids are produced via plant metabolic engineering - Justify. (06 Marks)

Module-5

- 9 a. Describe fermenter with a neat labeled diagram with their applications. (10 Marks)  
b. Explain waste water treatment. (10 Marks)

OR

- 10 a. Explain the various types of fermentation with suitable examples. (10 Marks)  
b. Biofuels are produced using agricultural waste. Explain the process. (10 Marks)

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