

(3 hours)

total marks: 80

N.B.

1. **Question no. 1** is compulsory.
2. Attempt any **three** out of five questions.
3. Assume suitable data wherever required.
4. Draw suitable diagram wherever required.

1. Write short notes on **any four**.

- a) Modern biotechnology
- b) RNA structure and its function.
- c) Bioinformatics
- d) Surface Immobilization
- e) Cell fusion technology

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2. a) Give the classification of microorganism. Differentiate between prokaryotes and eukaryotes in terms of their internal structure and functions.

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b) i) Give the difference between micronutrients and macronutrients

05

ii) Why biotechnology is an interdisciplinary pursuit?

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3. a) With suitable diagram explain stages in production of liquid enzyme preparation.

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b) What is enzyme immobilization? Describe briefly the various methods of enzyme immobilization.

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4. a) Explain the Industrial Application of Enzymes.

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b) What is the impact of pharmaceuticals and biopharmaceuticals product on human life? 10

5. a) Role of biotechnology in food and beverage fermentation.

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b) Biotechnology in waste water & sewage treatment.

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6. Explain **any two** from the following:-

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a) Dialysis and Reverse osmosis

b) Chromatography.

c) Crystallization and drying.

d) Biotechnology in agriculture
