PG Even Semester Exam, May 2025

Biotechnology

4th Semester

COURSE NO. BTYCC – 653A

[Industrial and Environmental Biotechnology]

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer five questions, taking one from each Unit

UNIT-I

1. a. Write short notes on: 3x3=9
   i. Fermentation technology
   ii. Immobilization of enzymes
   iii. Application of enzyme
   b. Chalk out the pathway of production of citric acid. 5
2. a. State the microbial processes of production, screening and strain improvement of microorganisms. 8

b. Write a brief note on production of antibiotics. 6

3. Write a note on bio-entrepreneurship. Write about the scope of bio-entrepreneurship. 7+7=14

4. Write short notes on: 3.5x4=14

   a. BIRAC

   b. MSME

   c. Technology transfer

   d. Make in India

UNIT-III

5. What is industrial effluent? Write notes on flocculation and bioleaching. 4+5+5=14

6. Writes notes on: 3.5x4=14

   a. Phytoremediation with examples

   b. GMO for environmental improvements with example.

   c. Anaerobic treatment mechanism

   d. Kinetics of biodegradation of waste

UNIT-IV

7. a. What is bioconversion? Discuss how food wastes are converted to useful products by bioconversion. 2+5=7

   b. Discuss the roles of microorganism in the production of various food additives by fermentation. 7

8. Write about production and applications of bacteriocins from lactic acid bacteria. 14

UNIT-V

9. What are plant growth promoting rhizobacteria (PGPR)? How do their interactions with plants contribute to sustainable agriculture, particularly through induced systemic resistance (ISR) mechanism. 2+12=14

10. Define biofertilizer. Discuss the pros and cons of using biofertilizers over chemical fertilizers. Critically evaluate how using my mycorrhiza can improve soil health, crop yield and environmental sustainability. 2+4+8=14

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