2024/SEM/EVEN/08/28/BTY-653A/317

PG Even Semester Exam, 2024

Biotechnology

4th Semester

COURSE NO. BTYCC – 653A

[Industrial & 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. What is bioprocess technology? Elaborate in terms of upstream processing, fermentation and downstream processing with examples. 2+6=8

   b. Write brief notes on: 3x2=6

      i. Immobilization of enzymes

      ii. Industrial production of ethanol

2. Give brief account on the industrial production of food and therapeutics. 14

Turn over

UNIT-II

3. Chalk out the steps of isolation and strain improvement of micro organisms of industrial interest. Give application of enzymes in food processing. 7+7=14

4. Write notes on following: 7+7=14

   a. Food ingredients and additives prepared by fermentation.

   b. Bio-conservation of food wastes to useful products.

UNIT-III

5. What is bio-entrepreneurship? What are the factors shaping opportunities for innovation and entrepreneurship in biotechnology. 2+12=14

6. Write down the salient features of the entrepreneurship development programmes of following agencies:

   (a) BIRAC, (B) Make in India 7+7=14

UNIT-IV

7. a. Describe types of bioremediation and their benefits with example. 7

   b. Describe the kinetics of biodegradation of wastes. 7

8. a. What is industrial waste? Explain the characteristics, types and treatment of industrial waste. 7

   b. Describe the advantages and disadvantages of anaerobic and aerobic treatments. 7

UNIT-V

9. Write the process of development of bio-insecticides with special reference to Bt toxin. 14

10. Describe different types of bio-fertilizer. Write about the plant-microbe interaction with reference to PGPR. 7+7=14

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