

Total No. of Printed Pages—3

**5 SEM TDC DSE BOT (CBCS) 4 (H)**

**2024**

( November )

**BOTANY**

( Discipline Specific Elective )

( For Honours )

Paper : DSE-4

**( Industrial and Environmental Microbiology )**

*Full Marks : 53*

*Pass Marks : 21*

*Time : 3 hours*

*The figures in the margin indicate full marks  
for the questions*

1. Answer in brief :

1×5=5

- (a) What is bioremediation?
- (b) Give example of a media used to grow fungi.
- (c) Write the full form of TOC.
- (d) Define lyophilization.
- (e) Name the enzyme used for casein hydrolysis.

( 2 )

2. Write short notes on any *three* of the following :  $3 \times 3 = 9$

- (a) Ultrafiltration
- (b) Economic importance of mycorrhizae
- (c) Air-lift fermenter
- (d) Starch hydrolysis

3. Answer briefly (any *four*) :  $2 \times 4 = 8$

- (a) What is the necessity of determination of BOD?
- (b) Give examples of cell disruption technique.
- (c) What is the working principle of centrifugation?
- (d) Name two symbiotic nitrogen-fixing bacteria.
- (e) Differentiate between batch and continuous fermentation.

4. Answer the following (any *three*) :  $5 \times 3 = 15$

- (a) "Mycorrhiza is used to reclaim soil fertility." Explain.
- (b) Mention the advantages of enzyme immobilization.
- (c) Describe how microbes act as indicators of water quality.
- (d) Describe briefly the steps involved in downstream processing.

( 3 )

5. Write in brief about the methods of isolation of microorganisms from soil. 6

Or

Describe the application of immobilized penicillin acylase enzyme.

6. Write an account on different types of bioreactors used in fermentation process. 10

Or

Describe how glutamic acid and penicillin are produced by fermentation process.  $5 + 5 = 10$

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