

**2024/TDC (CBCS)/EVEN/SEM/  
BOTDSE-601T/037**

**TDC (CBCS) Even Semester Exam., 2024**

**BOTANY**

**( 6th Semester )**

Course No. : BOTDSE-601T

**(Industrial and Environmental Microbiology )**

Full Marks : 50

Pass Marks : 20

Time : 3 hours

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

**UNIT—I**

**1. Answer any *three* of the following questions :**

**1×3=3**

- (a) What is centrifugation?
- (b) What do you mean by environmental microbiology?
- (c) What are the common industrial products of microbes?
- (d) Give example of microbial vitamins.

( 2 )

2. Answer any *one* of the following questions : 2

- (a) Write a short note on the role of microbes in industries.
- (b) Write a note on antibiotics.

3. Answer any *one* of the following questions : 5

- (a) Discuss the scopes and applications of microbes in industry and environment.
- (b) Discuss the role of microbes in the production of citric acid.

UNIT—II

4. Answer any *three* of the following questions :  
1×3=3

- (a) What is bioreactor?
- (b) Define air-lift fermenter.
- (c) What is solid-state fermentation?
- (d) What do you mean by batch fermentation?

5. Answer any *one* of the following questions : 2

- (a) What are the advantages of batch fermentation?
- (b) Write two important microbes participate in fermentation.

( 3 )

6. Answer any *one* of the following questions : 5

- (a) Describe the components of a typical bioreactor. Add diagram. 1+4=5
- (b) Discuss the advantages and disadvantages of continuous fermentation process. 3+2=5

UNIT—III

7. Answer any *three* of the following questions :  
1×3=3

- (a) What is immobilization?
- (b) What do you mean by starch hydrolysis?
- (c) What is glucose isomerase?
- (d) What is penicillin acylase?

8. Answer any *one* of the following questions : 2

- (a) Write a note on cellulose hydrolysis.
- (b) Write a short note on casein.

9. Answer any *one* of the following questions : 5

- (a) Discuss the role of microbial enzymes in industrial production and immobilization.
- (b) Explain how starch is degraded by the action of microbes.

( 4 )

UNIT—IV

10. Answer any *three* of the following questions :

1×3=3

- (a) What is COD in water?
- (b) What is the principle of TOC?
- (c) Give two examples of indicator microorganism.
- (d) What is faecal coliform?

11. Answer any *one* of the following questions :

2

- (a) What is the difference between COD and BOD?
- (b) Write a short note on eutrophication.

12. Answer any *one* of the following questions :

5

- (a) Discuss the role of microbes sewage and domestic waste water treatment system.
- (b) Discuss the role of microorganisms as indicators of water quality.

24J/674

( Continued )

( 5 )

UNIT—V

13. Answer any *three* of the following questions :

1×3=3

- (a) What do you mean by biological fixation?
- (b) What is bioremediation?
- (c) What is *Arbuscular mycorrhiza*?
- (d) What is VAM?

14. Answer any *one* of the following questions :

2

- (a) Distinguish between *Ectomycorrhizae* and *Endomycorrhizae*.
- (b) Write a note on *Rhizobium*.

15. Answer any *one* of the following questions :

5

- (a) Describe in brief about the role of microbes in agriculture.
- (b) Discuss the microbes involved in bioremediation processes. State the advantages of bioremediation.

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