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**2022/TDC (CBCS)/EVEN/SEM/
BOTDSE-601T/280**

TDC (CBCS) Even Semester Exam., 2022

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*

SECTION—A

Answer any *fifteen* of the following questions :

1×15=15

1. What are amylases?
2. What are lipases?
3. What is a French press?
4. What are lysozymes?
5. Name one bacterial medium.
6. What is a bioreactor?

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(Turn Over)



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7. How is oxygen measured in a bioreactor?
8. What percentage of oxygen is required for strict anaerobes?
9. What are the growth medium in a typical solid-state fermentor?
10. What is the chemical nature of cellulose?
11. Starch is made of which subunits?
12. What is the name of major milk protein?
13. What is an immobilized enzyme?
14. State one advantage of enzyme immobilization.
15. What is BOD ?
16. Which bacteria indicates water pollution?
17. Name one free living N_2 fixer.
18. Name one symbiotic N_2 fixer.
19. What are VAMs?
20. Name one endomycorrhizal fungus.

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SECTION—B

Answer any *five* of the following questions : $2 \times 5 = 10$

21. How are bacterial cells disrupted?
22. What is downstream processing?
23. What are the advantages of solid-state fermentation?
24. What are the drawbacks of solid-state fermentation?
25. What are the applications of enzyme immobilization?
26. Write two methods of immobilization.
27. How is BOD estimated?
28. How are TDS and TOC estimated?
29. Write the advantages of biological N_2 fixation.
30. What are the roles of mycorrhizae in plant health?

SECTION—C

Answer any *five* of the following questions : $5 \times 5 = 25$

31. What is lyophilization? How is lyophilization performed? What are its advantages? $1+2+2=5$

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32. Compare and contrast submerged and stationary fermentations. 3+2=5
33. What are fixed bed bioreactors? Draw and describe the features. 1+4=5
34. How are enzymes immobilized at industrial scale? Discuss few commercial examples of enzyme immobilization. 2+3=5
35. Discuss the chemical nature of cellulose. Name the enzymes which degrade cellulose. 2+3=5
36. Discuss the roles, with examples, of microbial sewage treatment. 3+2=5
37. Discuss the methods of detection of different coliform bacteria in water samples. 5
38. How are soils contaminated? Discuss the use of biological methods of soil remediation. 1+4=5
39. What are mycorrhizae? What are different types of mycorrhizae? Discuss the features of each type. 1+4=5
40. Discuss the process of citric acid formation from molasses and starch-based media. 5

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