

2022

BOTANY — HONOURS

Paper : DSE-A-2

(Industrial and Environmental Microbiology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions : 2×5
- (a) What is downstream processing?
 - (b) What is Liophilisation?
 - (c) Name one microbial source each of glucose isomerase and penicillin acylase.
 - (d) What is activated sludge?
 - (e) Give an example of fungal component in ericoid mycorrhizal association.
 - (f) What is biosensor? Give an example of microbial biosensor.
 - (g) Distinguish between batch and continuous fermentation.
2. Write short notes on (*any two*) : 5×2
- (a) Constantly stirred fermentor and fixed bed fermentor.
 - (b) Techniques involved in cell disruption.
 - (c) Discuss briefly the role of microbes in secondary sewage treatment.
3. Answer *any three* questions :
- (a) Discuss the fermentation conditions and process of Penicillin production. State the applications of immobilized glucose isomerase. 7+3
 - (b) Name two soil inhabiting N₂ fixing bacteria. Describe with suitable diagrams the process of colonization of a root nodulating bacteria. Discuss in brief the process of microbial bioremediation in soil contaminated with heavy metals. 2+4+4
 - (c) What is culture dependant and culture independant microbial population? Discuss briefly two processes each for study of culture dependant and culture independant microbes. 2+[(2+2)×2]
 - (d) What is potability of water? Name two indicator microorganisms responsible for nonpotability of water. Discuss the properties and give two examples of indicator microbes. 2+2+3+3
 - (e) What is meant by enzyme immobilization? Write advantages and limitations of the process. Discuss, in brief, the various methods of immobilization. Give two examples of microbes used for industrial enzyme immobilization. 2+3+4+1
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