QP Code: P25C013

Reg. No : .....

Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

III SEMESTER (CBCSS - PG) DEGREE EXAMINATIONS, OCTOBER 2025

M. Sc. Biotechnology

GBT3C02 : BIOPROCESS TECHNOLOGY

2024 Admission Onwards

Time:3 Hours **Maximum Weightage:30**

Part A

*Short answer type questions: Answer **any four** questions. Weightage **2** for each question.*
(4x2 = 8 Weightage)

1. Explain the need for aeration and agitation in bioreactors.
2. Explain sterilization methods used for fermenters.
3. Compare traditional fermentation with modern bioprocess-based fermentation.
4. Analyze industrial applications of immobilized cells in continuous fermentation.
5. Discuss the role of antifoams in fermentation.
6. Analyze the stability of microbial reactors under varying conditions.
7. Analyze the role of strain improvement in metabolite overproduction.

Part B

*Short essay-type questions: Answer **any four** questions. Weightage **3** for each question.*
(4x3 = 12 Weightage)

8. Describe microbial biomass, microbial metabolites, and recombinant products with suitable examples.
9. Define random mutagenesis and site-directed mutagenesis with examples.
10. Discuss the role of precursors and metabolic regulators in medium formulation.
11. Critically evaluate the role of feedback systems in industrial fermentation.
12. Evaluate the drying and crystallization methods for pharmaceutical products.
13. Discuss the advantages of fed-batch culture in antibiotic production.
14. Explain the methods of measuring key process variables in bioreactors.

Turn Over

Part C

*Essay-type questions: Answer **any two** questions. Weightage **5** for each question.*
(2x5 = 10 Weightage)

15. What is immobilisation? Explain various methods of immobilization and discuss the application of immobilization of whole cell.
16. Discuss the role of probes and sensors in monitoring fermentation parameters.
17. Analyze the influence of Reynolds number on mixing efficiency and oxygen transfer.
18. Compare centrifugation and filtration for microbial mass removal.

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