

QP Code: PV25B001

Reg. No :

Name :

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

II SEMESTER (CBCSS-VP) DEGREE EXAMINATION, MARCH 2025

M Voc Applied Biotechnology

GEC2AB04 : INDUSTRIAL BIOTECHNOLOGY

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. List the key structural features of a Tower Bioreactor. [BTL1]
2. Define organic acids. Write the uses of citric acid, acetic acid, and gluconic acid in industries? [BTL1]
3. Explain the importance of IPR in India's economic development. [BTL2]
4. Summarize the key steps involved in downstream processing in biotechnology. [BTL2]
5. Apply the principles of fermentation technology to explain the production process of Streptomycin. [BTL3]
6. Analyze the impact of pH fluctuations on microbial growth in bioreactor. [BTL4]
7. Critically assess the possibility of using bioplastics as a global replacement for conventional plastics. [BTL5]

Part B

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

8. Define submerged fermentation and solid-state fermentation with examples. [BTL1]
9. Explain the strain improvement methods in industrial microbiology. [BTL2]
10. Apply the principle of biotransformation to explain steroid biotransformation. [BTL3]
11. How would you apply for a patent in India for a biotechnology invention. [BTL3]
12. Apply the principles of fermentation technology to explain the production process of glutamic acid. [BTL3]
13. Analyze the factors that influence the success of product development in Biotechnology. How can these factors be managed effectively? [BTL4]
14. List the steps involved in the industrial-scale production of PHA. [BTL4]

Turn Over

Part C

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

15. Define main types of bioreactors and their applications. [BTL1]
16. Explain the role of biotechnology industries in India's economic growth. [BTL3]
17. Develop a process flowchart for the industrial production and downstream processing of the Hepatitis-B vaccine. [BTL3]
18. Examine the downstream processing techniques used in the production of ethanol, glycerol, butanol, and acetone, focusing on the purification, separation, and recovery methods employed in each process. [BTL4]
