

B.Sc. Semester - 5 (NEP-2020) Examination**Oct/Nov - 2025****BIT: Bioprocess and Biochemical Engineering (Major-11)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

-
- Que.1 (1) What are the main types of fermentation processes? Give one example of each. (05)
(2) List the major component parts of a fermentation process and explain their role. (05)
OR
- Que.1 (1) Explain the difference between primary and secondary screening of industrially important microorganisms. (05)
(2) How are protoplast fusion and recombinant DNA technology applied to improve industrially important microbes? (05)
- Que.2 (1) Mention any three design principles or construction parameters important for fermenter design. (05)
(2) Classify bioreactors with suitable examples. (05)
OR
- Que.2 (1) Explain the role of aeration and mixing mechanisms in maintaining microbial growth during fermentation. (05)
(2) Differentiate between batch and continuous fermentation with one industrial example of each. (05)
- Que.3 (1) What are the different classifications of fermentation media? Give one example for each type. (05)
(2) Briefly explain two important strategies used in media design and formulation. (05)
OR
- Que.3 (1) Explain the importance of carbon and nitrogen sources in fermentation media with suitable examples. (05)
(2) Differentiate between inoculum medium and production medium with their specific purpose. (05)
- Que.4 (1) Explain any two mechanical methods of cell disruption with examples. (05)
(2) What is liquid-liquid extraction? Give one industrial example of its use in product recovery. (05)
OR
- Que.4 (1) Differentiate between physical and biological assays used for characterization of fermentation products. (05)
(2) Write a short note on the role of filtration in cell separation during downstream processing. (05)
- Que.5 (1) Describe any two methods for the isolation of industrially useful microorganisms based on desired characteristics. (05)
(2) Define the Del factor and briefly explain its importance in the kinetics of sterilization (05)
OR
- Que.5 (1) What is media optimization? Mention any two approaches used for optimizing fermentation media. (05)
(2) Compare sedimentation and centrifugation as techniques for cell separation in downstream processing. (05)
