

M.Sc. (Micro) Semester - 3 (CBCS) Examination
OCT/NOV-2025 (AS PER SYLLABUS YEAR JUNE-2019)

Bioprocess Engineering and Fermentation Microbiology (Core (New))

Time: 2:30 Hours**Marks:70****Instructions:**

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

SECTION-I

- Que.1 Answer the following
- A) Write a short note on plant-based materials used at an industrial scale for production. (07)
 - B) Explain different materials used in industrial media. (07)
- OR
- Que.1 Discuss in detail the use of different protein sources of microbiological media in industrial-level processes. (14)
- Que.2 Answer the following
- A) Write a short note on physical and chemical methods used to achieve sterility. (07)
 - B) Explain in detail the Aerobic wastewater treatment. (07)
- OR
- Que.2 Write a detailed note on Bioreactors and their types. (14)
- Que.3 Do as directed (any seven out of eight questions each of one mark) (07)
- 1) Enlist criteria for choosing a substance as a raw material
 - 2) Enlist the advantages of the batch culture process
 - 3) What are the disadvantages of continuous culture
 - 4) Enlist growth factors that affect the industrial processes
 - 5) What is sterility testing, and how it is done, explain in short.
 - 6) How are fermenters sterilized?
 - 7) What is an airlift bioreactor? What is its advantage?
 - 8) What are the different levels of production scale-up, and discuss volumes that they deal with?

SECTION-II

- Que.1 Discuss in detail any one amino acid fermentation with detailed information about process parameters. (14)
- OR
- Que.1 Answer the following (Two short Questions)
- A) Write a short note on fermentative production of Riboflavin. (07)
 - B) Explain how wine production is done from grapes (07)
- Que.2 Write a detailed essay on the production of single-cell protein (SCP) and its nutritional importance in modern times. (14)
- OR
- Que.2 Answer the following (Two short Questions)
- A) Write a short note on advantages and applications of ergot alkaloids. (07)
 - B) Explain microbial production of citric acid. (07)
- Que.3 Do as direct (any seven out of eight questions each of one mark). (07)
- 1) Enlist parameters significant for amino acid fermentation
 - 2) Discuss the advantages of fermented foods over processed foods.
 - 3) What is metabolic engineering?
 - 4) Give two examples of antibiotic fermentation with producer organisms.
 - 5) What are the different alcoholic and non-alcoholic beverages?
 - 6) Which autotrophic organisms are used for SCP production?
 - 7) Which organisms is/are involved in acetic acid fermentation?
 - 8) Give a few examples of microbial polysaccharides.
