

M.Sc. (Micro) Semester - 3 (CBCS) Examination**Oct/Nov-2022 (NEW COURSE)****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

- Q.1 Answer the following.
- A. Write a short note on different protein sources used at an industrial scale for production. 07
- B. Explain different materials used in industrial media. 07
- OR**
- Q.1 Discuss in detail the use of plant-based materials as a source of microbiological media in industrial-level processes. 14
- Q.2 Answer the following.
- A. Write a short note on physical and chemical methods used to achieve sterility. 07
- B. Explain in detail the oxygen transfer rate in activated sludge. 07
- OR**
- Q.2 Write a detailed note on Bioreactors and their types. 14
- Q.3 Do as directed (any seven) 07
1. Enlist criteria for choosing substance as raw material
 2. Enlist disadvantages of the batch culture process
 3. What are the advantages 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 is a bioreactor sterilized?
 7. What is an airlift bioreactor? What is its advantage?
 8. What are different levels of production scale up and discuss volumes that they deal with?

SECTION-II

- Q.1 Discuss in detail any one amino acid fermentation with detailed information about process parameters. 14
- OR**
- Q.1 Answer the following (Two short Questions)
- A. Write a short note on fermentative production of Vitamin B12. 07
- B. Explain how wine production is done from grapes 07
- Q.2 Write a detailed essay on the production of single cell protein (SCP) and its nutritional importance in modern times. 14
- OR**
- Q.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 xanthan gum. 07
- Q.3 Do as direct (any seven) 07
1. Enlist parameters significant for amino acid fermentation.
 2. Discuss advantages of fermented foods over processed foods.
 3. What is metabolic engineering?
 4. Give two examples of antibiotics fermentation with producer organisms.
 5. What are 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.
