

M.Sc. (Micro) Semester - 3 (CBCS) Examination**Nov/Dec-2023 (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**Que-1 Answer the following**

- (A) Write a short note on different carbohydrates sources used for large scale production. (07)
- (B) Explain different materials used in industrial media. (07)

OR

Que-1 Discuss in detail the use of plant-wastes as a media source in industrial-level processes. (14)**Que-2 Answer the following**

- (A) Write a short note on physical and chemical methods employed for sterility. (07)
- (B) Explain in detail the oxygen transfer rate in activated sludge. (07)

OR

Que-2 Write a detailed note on Bioreactors and its types. (14)**Que-3 Do as directed (any seven out of eight questions each of one mark).** (07)

- (1) Enlist criteria for selection of any 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 the most
- (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**Que-1** Discuss in detail citric acid fermentation process & its parameters. (14)

OR

Que-1 Answer the following (Two short Questions)

- (A) Write a short note on fermentative production of Vitamin B12. (07)
- (B) Discuss in detail production of grape wine. (07)

Que-2 Write a detailed essay on the production of single cell protein (SCP) and its nutritional significance. (14)

OR

Que-2 Answer the following (Two short Questions)

- (A) Write a short note on production and applications of ergot alkaloids. (07)
- (B) Discuss microbial synthesis of xanthan gum. (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) Differentiate fermented foods and 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
