Seat No. : _____

NE-124

November -2021

B.Sc., Sem.-V

304 : Microbiology

(Fermentation Technology)

Time : 2 Hours] **[Max. Marks : 50**

Instructions : (1) **All** questions in **Section – I** carry equal marks.

(2) Attempt any **three** questions in **Section – I.**

(3) **Section – II** is **Compulsory.**

Section – I

1. (A) Discuss microbial biomass and enzymes as range of fermentation processes. 7

   (B) Describe how an established fermentation process can be divided into six component parts. 7

2. (A) Describe the development of fermentation industry after 1964. 7

   (B) Explain microbial metabolites and recombinant products as fermentation products. 7

3. (A) Discuss secondary screening of industrially important micro organisms. 7

   (B) Explain the over production of amino acids. 7

4. (A) Describe the use of recombination for strain improvement. 7

   (B) Describe the methods for preservation of industrial organisms. 7

5. (A) Explain the development of bacterial and yeast inoculum for fermentation process. 7

   (B) Give details of Nitrogen sources used as fermentation media ingredient. 7

6. (A) Explain the batch method for fermentation media sterilization. 7

(B) Explain the role of precursors, inhibitors and antifoam agents in fermentation media formulation. 7

7. (A) Highlight the essential features of a bioreactor. 7

(B) Discuss the types and role of impellers, baffles and spargers in a bioreactor. 7

8. (A) Describe the design and working of airlift bioreactor. 7

(B) Explain the monitoring of pH, temperature and oxygen in a bioreactor. 7

Section – II

9. Answers the following in **1-2** lines : (any **8**) **8**

(1) Define the term fermentation.

(2) What is Del factor ?

(3) Give two examples of primary metabolites.

(4) Which material is used in the body construction of bioreactor ?

(5) What is dissolved oxygen ?

(6) Name two methods of continuous sterilization.

(7) What is the function of agitator in a bioreactor ?

(8) What are protoplasts ?

(9) Define mutation.

(10) Which mutants are isolated by gradient plate technique ?

(11) Give any two applications of cyclone fermenter.

(12) Name the media for primary screening of organic acid producers.

(13) Name two chelators used as media ingredient.

(14) Give two examples of filters used for media sterilization.

(15) Name the organism used as index of sterilization.

(16) Name two amylase producers.