

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Food Technology) (Sem.-6)

**BIOPROCESS ENGINEERING**

Subject Code : BTFT-325.1-19

M.Code : 91971

Date of Examination : 12-07-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a. What is steady state concept of Michaels Menten equation?
- b. What are the commonly used nitrogen sources for media preparation for microorganism growth?
- c. How is foam formation controlled in bioreactors?
- d. What is the application of spray drying in bioprocess engineering?
- e. What are important considerations in design of shaking machines?
- f. Differentiate between the competitive and non competitive inhibition.
- g. How antibiotics are produced?
- h. Compare the Batch and Continuous culture systems.
- i. Write the few applications of solid-state fermentation.
- j. What methodology is employed to make air sterilize in aerobic fermentation?

### SECTION-B

2. What are  $K_L a$  Values? Explain the oxygen balance technique for the determination of  $K_L a$  Values.
3. Describe the sources of media and its preparation and sterilization process.
4. Draw a neat well labelled diagram of submerged fermenter and describe its construction.
5. Find out the expression of D value for one log cycle. What is the significance of Z-value and F-value?
6. Write down the principle and working of chromatography technique based on adsorption.

### SECTION-C

7. Explain the construction and working of the batch type filters for recovery processes in fermentation.
8. How is the relationship between growth rate and substrate concentration established by using Monod Equation?
9. Derive Michaelis-Menten equation for enzyme catalyzed reaction.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**