Seat No. : _____

AK-122

April-2022

B.Sc., Sem.-VI

CC-310 : Microbiology

(Bioprocess 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) Describe the control of pH, temperature and foam in a fermenter. **7**
   (B) Explain containment of genetically engineered microbes. **7**

2. (A) Explain with examples; submerged fermentation. **7**
   (B) Write a note on scale up. **7**

3. (A) Explain filtration as a method of product recovery. **7**
   (B) Describe in details physico-chemical methods of cell disruption. **7**

4. (A) Describe activated sludge process for industrial effluent treatment. **7**
   (B) Describe drying and crystallization of fermentation product. **7**

5. (A) Give details of sterility testing. **7**
   (B) Describe principle, procedure and applications of LAL test. **7**

6. (A) Highlight fermentation economics with respect to market potential and strain improvement. **7**
   (B) Describe the bio assay of growth inhibiting products. **7**

7. (A) Explain the process and recovery methods for penicillin fermentation. **7**
   (B) Describe the role of auxotrophic mutants in L-lysin fermentation. **7**

8. (A) Enlist various applications, organisms used and the process for the production of amylase enzyme. **7**
   (B) Describe briefly the process and recovery of Ethanol from fermentation broth. **7**

SECTION – II

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

(1) What is downstream processing ?

(2) Name two chromatographic methods.

(3) Name two anaerobic processes used for biological treatment of effluent.

(4) Give an example of surface culture fermentation.

(5) What is liquid liquid extraction ?

(6) What is clean room environment ?

(7) Draw the chemical structure of 6 APA.

(8) Give any two examples of industrial centrifuges.

(9) What is biological containment ?

(10) What are colligends and collectors ?

(11) Name two detergents used for cell disruption.

(12) Give two examples of driers used for product recovery.

(13) What is solid substrate fermentation ?

(14) Give any two approaches for foam control in a fermenter.

(15) What is KLa ?

(16) What is crystallization ?