

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2289548

Roll No.

B.TECH.

Regular Theory Examination (Odd Sem-VII), 2016-17

**BIOSEPERATION & DOWN STREAM
PROCESS**

Time : 3 Hours

Max. Marks : 100

SECTION - A

Attempt all questions. All questions carriers equal marks. (10×2=20)

1. Define Electro dialysis and Isoelectric focusing
2. Draw drying rate curve
3. Enlist various techniques used in purification
4. Define retention time and asymmetric peak in Chromatography?
5. Give any one method for separation of two miscible liquids.

6. What is Ultra-centrifuge?
7. What do you mean by fouling?
8. Differentiate hormone and enzyme.
9. What are factors governing the drying process?
10. Define lyophilization and its importance.

SECTION - B

Attempt only three questions. Each question carries 10 marks. (3×10=30)

1. How can you separate proteins of same molecular weight from unknown sample by electrophoresis?
2. Explain one dryer and one filter for purification of enzymes.
3. Bioseperation play an important role in isolation and purification of biochemical metabolites. Justify your answer with proper examples.
4. Discuss the principle behind centrifugation. What are the differences between analytical and preparative centrifugation?
5. Discuss the processes which utilize semi-permeable membranes for separation processes and their applications.

SECTION - C

Answer all questions. Each question carries 10 marks. (5×10=50)

1. Determine terminal velocity of particle in centrifugation and settling time.

OR

Discuss various modes of separation of chromatography. Explain affinity chromatography with its industrial applications

2. a) In an ultra-filtration of chymotrypsin in a spiral wound module at a rate of 1.3×10^{-3} cm/sec (28 gal/ft² day). The solution concentration is 0.88% wt%, the protein diffusion coefficient is 9.5×10^{-7} cm²/sec, and the boundary layer is about 180×10^{-4} cm thick. How high is the surface concentration?
- b) Once the desirable product is obtained, What are the processes in the downstream processing and polishing of the product?
3. What are the crystal size distribution patterns? Also describes the following :-
- a) Population density
- b) Crystal from continuous phase

- c) Dominant crystal size
- d) Batch Crystallization
- e) Re-crystallization process

4. Briefly describe about Penicillin G biosynthesis, production and purification

5. Write short note on **any two** :

- a) Absolute and Depth filters
- b) Flocculation
- c) Cell wall and membrane

OROROROR