



M.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

First Semester

BIOTECHNOLOGY

P18BTII203: Bioproduct Recovery and Purification

COURSE OUTCOMES

- CO1:** Understand the various principles involved in bioseparation and cell disruption techniques
- CO2:** Explain the different types of filtration and centrifugation techniques used in bioproduct recovery
- CO3:** Understand the various techniques in different unit operations involved for the isolation and extraction of bio-products from biological samples
- CO4:** Select and use various methods of chromatography in protein purification
- CO5:** Illustrate different methods of final polishing for bio-products produced at lab and industrial level
- CO6:** Develop a process design and choose the appropriate purification steps and perform the techno-economical analysis for purification of bioproducts

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Intracellular product recovery- find proper order for isolation and purification steps CO1 [K₃]
 1. Filtration, 2. Removal of cell debris, 3. Sonication, 4. Centrifugation
 - a) 1,2,3,4 b) 4,2,1,3
 - c) 1,2,4,3 d) 4,3, 2,1
2. Which of the following cell disruption having non-toxic and non-selective and require huge energy CO1 [K₂]
 - a) Chemical methods b) Physical methods
 - c) Enzymatic methods d) Biological methods
3. Accumulation of rejected solute on the feed side of the membrane or filter surface, excluding cake or adsorbed layers is called as..... CO2 [K₂]
 - a) Conductance b) Concentration Polarization
 - c) Cross flow filtration d) Batch Filtration
4. Matching type item with multiple choice code: CO2 [K₃]

Description	Key words
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Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

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| 27. Recommend and propose RIPP scheme for product with high market value | CO1 [K ₃] |
| 28. Compare any five-filtration equipment's widely used in industry to separate biomolecules | CO2 [K ₂] |
| 29. Design experimental procedure to isolate or separate biomolecules form the mixture of sample using two polymer system. | CO3 [K ₄] |
| 30. Suggest and illustrate experimental procedure to separate biomolecules based on molecular weight | CO4 [K ₃] |
| 31. Design and illustrate unit operations to maximize/optimize bioproduct recovery by using SuperPro for any one low volume high value product. | CO5 [K ₄] |
