Register No: ……

M.TECH. DEGREE EXAMINATIONS: JUNE 2011

Second Semester

BIO TECHNOLOGY

BTY506: Bioseperation Technology

Time: Three hours **Maximum Marks: 100**

Answer ALL Questions

PART A (10x2 = 20 Marks)

1. How will you analyze the rheological properties of fermentation broth?
2. Name the instruments that are used to measure the biomass in fermenters.
3. What is the role of CTAB and SDS in cell disruption?
4. How will you increase the porosity of filter cake?
5. Name any two applications of supercritical fluid extraction.
6. The solubility of protein is 15g/liter at ammonium sulphate concentration of 2.2M and 0.25g/liter at 3.0M.Calculate the solubility of the protein at 3.8M of the salt by cohn equation.
7. Differentiate between HPLC and HPTLC.
8. Write the principle of IMAC.
9. What is the principle of lyophilization?
10. What is meant by constant rate and falling rate period in drying?

PART B (5 x 16 =80 Marks)

11. a) (i) Explain the five stages involved in the recovery of bioproduct. (8)

(ii) Explain the guidelines to be followed while purifying recombinant proteins. (8)

(OR)

b) Explain the role of viscometer and Microscope with image analyzer in downstream processing.

12. a) (i) Write short notes on types of centrifuges and their application. (8)

(ii) Explain briefly about dynomill in cell disruption. (8)

(OR)

b) Explain briefly about the working principle of ultrasonicator and high pressure homogenizer in cell disruption.

13. a) Derive the filter cake and filter medium resistance in ultrafiltration.

(OR)

b) Write short notes on

(i) Electrophoresis (8)

(ii) Super critical fluid extraction. (8)

14. a) Explain the theory,practice, principle and application for

(i) Gel filtration chromatography. (8)

(ii) Immunosorbent chromatography. (8)

(OR)

b) Explain the theory,practice, principle and application for

(i) HPLC. (8)

(ii) Reverse phase chromatography (8)

15. a) (i) 10kg of adipic acid is slurried in 13.1kg of water and heated to 90^0c to solubilize the acid. The solution is then filtered to remove insoluble impurities. During the heating and filtration 10% of water is evaporated. The clarified solution cooled to 34^0C is 0.05 Kg acid per water. Determine the weight of crystals recovered in this operation. (10)

(ii) Differentiate

(a) bound and unbound moisture

(b) Free and Equilibrium moisture. (6)

(OR)

b) Explain the case studies on product purification of aspartic acid and Taq polymerase.

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