

21

Duration: 3hrs

Q. P. Code: 16522

Instructions:

Total marks: 80

1. Question No.1 is compulsory.
2. Attempt any three questions from remaining five questions.
3. All question carry equal marks.
4. Assume suitable data if necessary and indicate it clearly.

Q.No. 1. Write short notes on followings: (Any 4)

(20M)

- a) Characteristic and pretreatment of fermentation broth
- b) Principal of centrifugal separation and application
- c) Isoelectric Focussing
- d) Reverse micellar extraction
- e) Supercritical fluid extraction

Q.No. 2. A) An antibiotic exhibit a k value of 10 in organic solvent-water system. If the aqueous feed has 25mg of solute.

(10M)

- i) How much could be extracted with an equal volume of organic solvent?
- ii) What percentage of the antibiotic will be extracted if four equal portion of the same volume of organic solvent is used?

B) Gas containing 2 % by volume solute A is fed to an absorption tower at a rate of $0.35\text{m}^3/\text{s}$ at 299 k and 106.658 kpa pressure and 95% of original solute is removed by absorbing it in solvent B. Solvent containing 0.005 mole fraction of solute enters the tower at top and exit liquid stream from absorption tower contain 0.12 mole A per mole B. Find out the flow rate of liquid solvent entering the absorption tower on solute free basis.

(10M)

Q. No.3. a) Explain in detail sequential release of products by the action of enzymes in cell disruption.

(10M)

b) Give detail account on selective denaturation of protein.

(5M)

c) Brief different stages of downstream processing.

(5M)

- Q.No. 4. a) Discuss the operating principle and analysis of single batch extraction. (10M)
- b) Explain aqueous two phase system. (5M)
- c) Explain precipitation by the addition of solvent. (5M)
- Q. No. 5. a) Explain principle of liquid- liquid extraction for recovery of bioproducts (10M)
- b) List out various methods of cell disruption. (5M)
- c) give the schematic diagram of membrane separation and explain the components (5M)
- Q.No. 6. Write short notes along with application for the followings (any 4) (20M)
- a) Lyophilization
- b) Ultrafiltration
- c) Dialysis
- d) Membrane fouling and cake resistance
- e) Electrodialysis
