

Exam.Code:0910

Sub. Code: 6318 ✓

2054

B.E. (Biotechnology) Sixth Semester
BIO-614: Down Stream Processing ✓

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Compare downstream processing to upstream processing.
- b) Give the advantages of aqueous 2 phase extraction over solvent extraction.
- c) How can fouling of membranes be prevented?
- d) Very briefly give the principle of immune-electrophoresis.
- e) Give the downstream processing steps in ethanol fermentation. (5x2)

UNIT - I

- II. a) Give the characteristics of a fermentation broth that influence downstream processing.
b) Explain bead mill disruption of microbial cells. (6,4)

- III. a) Give different methods of pre-treatment of fermentation broth before filtration.
b) Draw and explain the working of any one industrial centrifuge. (4,6)

- IV. a) Explain the principle of liquid-liquid extraction.
b) Describe protein precipitation using organic solvents. (5,5)

UNIT - II

V. Explain ion exchange chromatography for purification of a biomolecule. (10)

VI. Why is drying of a bio-product required? Explain the design and working of any one drier. (10)

VII. Write notes on:-

- a) Crystallization
- b) Reverse osmosis. (5,5)

x-x-x