

Exam.Code:0910

Sub. Code: 6717

1058

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. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following briefly:

- a) How is downstream processing different from upstream processing?
- b) What are reverse phase and normal phase chromatography?
- c) What is the effect of temperature in chemisorption and physisorption?
- d) (Name atleast two detectors used in GC and HPLC.
- e) What is terminal velocity in a centrifugation run?
- f) Name the driving force in ultrafiltration and electrodialysis.
- g) What is selectivity of a solvent?
- h) Explain endosmosis.
- i) Give the principle of crystallization.
- j) How does EDTA assist in cell lysis?

(10x1)

UNIT - I

- II. a) Justify the role of downstream processing in biotechnological processes.
b) Explain the operation of tubular bowl centrifuge and disc bowl centrifuge. (4,6)
- III. a) Describe the cell wall structures of microbial cells.
b) Tabulate the advantages and disadvantages of various methods of cell lyses. (4,6)
- IV. a) Elaborate on the process of extraction in the isolation of a product from fermentation broth. Also explain any one extractor.
b) What are adsorption isotherms? What information can be obtained from them? Explain the Langmuir adsorption isotherm. (5,5)

P.T.O.

(2)

UNIT - II

- V. Give the principle and practice of separation of charged species by ion exchange chromatography. (10)
- VI. What is the theoretical background of electrophoresis? Explain iso-electric focusing technique for separation of proteins. (10)
- VII. Write short notes on the following:-
- a) Lyophilization
 - b) Reverse osmosis
 - c) Ethanol recovery
 - d) Membrane materials

(4x2½)

x-x-x