Exam.Code:0910
Sub. Code: 6717

1019
B.E. (Bio-Technology)
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) Name four stages of downstream processing.

b) Give the principal of cell lysis by ultrasonication.

c) Differentiate between precipitation and crystallization.

d) What is lyophilization?

e) Define adsorption isotherms.

f) What is an azeotroph.

g) How is dialysis different from reverse osmosis?

h) Name the polymerizing agent in PAGE?

i) What is the significance of relation factor in chromatography?

j) Give properties of good extraction solvent. (10x1)

UNIT – I

II. a) A 30-ml sample of broth from penicillin fermentation is filtered in the laboratory on a 3 cm^2 filter at a pressure drop of 5 psi. The filtration time is 4.5 min. and filter cake of *Penicillin chrysogenum* is significantly compressible with s = 0.5. If 500 liters broth from a pilot scale fermenter must be filtered in 1 hour, what size filter is required if the pressure drop is 15 psi? Residence due to the filter medium is negligible?

b) Describe in detail methods of cell disruption. (5,5)

III. Discuss the various stages in the recovery of a biomolecule from a fermented broth. What considerations would you keep in mind to conceive a proper scheme of recovery? Explain with suitable example. (10)

P.T.O.

IV. a) Briefly discuss the centrifugation. What are the features of the design of centrifuge?

b) Differentiate between ultrafilteration and microfilteration. (5,5)

UNIT – II

V. a) Give the principle of electrophoresis? Describe various electrophoresis techniques.

b) Why is affinity chromatography so important in separation technology? (7,3)

VI. What is product polishing and how is product polishing achieved? (10)

VII. Write a short note on any four of the following:-

a) Distillation.

b) Size exclusion chromatography.

c) Gas chromatography.

d) Dialysis.

e) Types of driers.

f) Crystallization. (4x2½)

x-x-x