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10BT73

Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017
Downstream Process Technology

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Explain the process for purification of High value low volume product with a suitable example. (10 Marks)
b. Give an account on downstream economics and various cost cutting strategies employed in downstream processing. (10 Marks)
- 2 a. What is cell disruption? Give a brief account on physical and chemical methods of cell disruption. (10 Marks)
b. A tubular bowl centrifuge with the internal diameter of 15cm and the length of 80cm is used for the concentration of E Coli. Calculate the settling velocity of the cells at the speed of 18,000 rpm in the centrifuge with the volumetric capacity of 250 litres per hour. (05 Marks)
c. Give descriptive note on industrial sedimentation process. (05 Marks)
- 3 a. Discuss in detail various types of staining used for identification of proteins as product of interest. (08 Marks)
b. Write short note on competitive ELISA. (06 Marks)
c. Describe the principle, working and application of SDS – PAGE. (06 Marks)
- 4 Write short notes on :
 - a) Extractive Distillation (05 Marks)
 - b) Adsorption isotherms (05 Marks)
 - c) Evaporation (05 Marks)
 - d) Aqueous Two – phase extraction. (05 Marks)

PART – B

- 5 a. Explain with neat diagram the design and configurations of membrane separation equipment. (10 Marks)
b. Explain the theory and applications of microfiltration. (06 Marks)
c. Write short note on electrodialysis. (04 Marks)
- 6 a. Write short note on super critical fluid extraction. (07 Marks)
b. Discuss in details various methods for in situ product removal. (06 Marks)
c. Explain the separation methods by precipitation with salts. (07 Marks)
- 7 a. Give an account on principle, instrumentation and applications of HPLC. (10 Marks)
b. Explain principle, advantages and applications of affinity chromatography. (10 Marks)
- 8 a. Explain the significance of volumetric flow rate and residence time in chromatographic column. (10 Marks)
b. Write the principle of crystallization and elaborate the procedure using industrial crystallizer. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.