M. Tech. Second Semester (Membrane & Separation Tech.) (F.T.)

13030 : Advanced Downstream Technology for Chemical Recovery & Waste Utilization : 2 MST 1

P. Pages :1 | AU - 3270

Time : Three Hours | Max. Marks : 80

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Notes :
1. Answer **any six** questions.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Diagrams and chemical equations should be given wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) How will you compare the performance of a centrifuge with respect to sedimentation? Discuss various centrifuges used in industry. **8**

b) If a centrifuge 0.9m diameter, rotates at 20Hz, then at what speed should a laboratory centrifuge of 150 mm diameter run, if it is to duplicate plant conditions? **6**

2. How supercritical fluids differ from conventional solvents used for extraction? Discuss various supercritical fluids and their selection criteria. **13**

3. What do you mean by haemodialysis? Discuss the theoretical analysis of solute transport in a haemodialyser. **13**

4. Explain the salient features of polymeric ion exchange resins and the ion exchange equilibria. What do you mean by separation factors in ion exchange? **13**

5. How are chromatographic separation techniques classified? Explain the basic theoretical principle and the characteristics of chromatographic peaks. **13**

6. Discuss the criteria for selection of solvent for extractive distillation and the salient features of separation technique. **13**

7. What are heterogeneous azeotropes? How are they separated? Explain in details. **13**

8. What do you mean by reactive distillation? Discuss the effect of various parameters on reactive distillation of ETBE. **13**

9. What is cryogenic distillation? Explain its salient features along with some important applications. **13**

10. Explain the following. **14**

i) Partitioned distillation columns in separation processes.

ii) Importance of energy conservation in separation processes.

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