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

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

P. Pages : 1 | **AV - 3379**

Time : Three Hours | Max. Marks : 80

Notes :
1. Answer **any six** question.
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. How to evaluate the performance of a tubular bowl centrifuge? Discuss in details considering resistance of particles in fluid and end effects. **14**

2. Discuss the criteria for selection of super critical solvents and the various applications of supercritical extraction. **13**

3. What is dialysis? Discuss its theoretical principle. How is hemodialysis carried out. Explain with neat sketch. **13**

4. What are the main resistances in ion exchange process and which strategy is followed to reduce these resistances? Also discuss the ion exchange equilibria and determination of equilibrium constant. **13**

5. How chromatographic technique helps in separation of mixture? Discuss the classification of chromatographic techniques. **13**

6. Discuss the difference between azeotropic distillation and explain salient features of azeotropic distillation. **13**

7. How to select solvent for extractive distillation? Discuss its salient features with a neat sketch along with its applications. **13**

8. What is reactive distillation? Discuss its advantages over reaction step and advantages over distillation step? **13**

9. Discuss the salient features of cryogenic distillation and its important applications. **13**

10. Explain the following. **14**

i) Divided wall column technology for separation processes.

ii) Importance of energy conservation in separation processes.

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