

IV B.Tech II Semester Regular Examinations, Apr/May 2006

MEMBRANE TECHNOLOGY

(Chemical Engineering)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. Mention the equilibrium governed separation processes for separation of homogeneous mixtures. Explain the process of distillation with examples. [16]
2. What are the factors to be considered while selecting a particular membrane process for a desired separation. [16]
3. Explain how the dense membranes are prepared from polymeric solutions or polymer melts. [16]
4. What are the different types of liquid membranes? Explain. [16]
5. What are the different flow patterns employed in continuous dialysers, Explain with the help of a neat sketch. [16]
6. What is neutral membrane electro dialysis? Explain with the help of a neat sketch. [16]
7. Write a note on the feed pretreatment for Reverse Osmosis. Why the pretreatment is necessary. [16]
8. What is plasticization? Explain its significance in gas permeation. [16]

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1. Write short notes on
 - (a) Ion Exchange
 - (b) Adsorption
 - (c) Dialysis
 - (d) Electrodialysis. [4×4=16]
2. Explain with a neat sketch the general principle of Electrodialysis. [16]
3. Write short notes on Porous membranes and Inorganic membranes. [16]
4. Explain the role of liquid membranes for the removal of phenol from waste water. [16]
5. What are the different flow patterns employed in continuous dialysers, Explain with the help of a neat sketch. [16]
6. Write short notes on
 - (a) Cation exchange membranes
 - (b) anion exchange membranes. [8+8]
7. Describe concentration polarization in Reverse Osmosis using the model based on film theory. Develop the necessary equation for flux. [16]
8. Explain the phenomena of gas separations in porous membranes. [16]

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1. Explain the terms membrane flux, Retention, concentration polarization, membrane fouling. What are the consequences of fouling. [16]
2. Explain with a neat sketch the general principle of Electrodialysis. [16]
3. Explain the general methods for the preparation of membranes. [16]
4. What are the different types of liquid membranes? Explain. [16]
5. Explain how the diffusion dialysis process can be employed to recover acid from a salt solution with the help of a sketch.
6. Describe the equipment used for Electro dialysis. [16]
7. Write a note on the feed pretreatment for Reverse Osmosis. Why the pretreatment is necessary. [16]
8. Discuss different models available for gas permeation through homogeneous membranes. [16]

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1. Write short notes on
 - (a) Ion Exchange
 - (b) Adsorption
 - (c) Dialysis
 - (d) Electrodialysis. [4×4=16]
2. What is Osmotic Pressure. Explain. Explain the principle of Osmosis. [16]
3. Write the general steps involved in preparation of the membranes. [16]
4. What are the different types of liquid membranes? Explain. [16]
5. What are the different flow patterns employed in continuous dialysers, Explain with the help of a neat sketch. [16]
6. What is neutral membrane electro dialysis? Explain with the help of a neat sketch. [16]
7. Write a note on the feed pretreatment for Reverse Osmosis. Why the pretreatment is necessary. [16]
8. What are the problems associated with membrane processing of gaseous mixtures? [16]
