

IV B.Tech II Semester Regular Examinations, Apr/May 2008

MEMBRANE TECHNOLOGY

(Chemical Engineering)

Time: 3 hours

Max Marks: 80

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

1. Explain the common features of all the membrane processes. [16]
2. Write the principle of Ultra filtration, Explain commercial applications of ultrafiltration. [16]
3. Describe the swelling and leaching process for the preparation of membranes. [16]
4. What are the methods available for representing stable liquid membranes between two liquids? [16]
5. Write short notes on
 - (a) Donnan dialysis
 - (b) Hemo dialysis
 - (c) Industrial dialysers
 - (d) Equipment for dialysis. [4×4=16]
6. Write short notes on
 - (a) Cation exchange membranes
 - (b) anion exchange membranes. [8+8]
7. Write a note on the feed pretreatment for Reverse Osmosis. Why the pretreatment is necessary. [16]
8. Write about the separation mechanisms of gas permeation. [16]

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1. Write a brief note on the significance of separation process in chemical process industries. [16]
2. Write the applications of Ultra filtration in food Industry. [16]
3. Write on the preparation techniques for immersion precipitation for the preparation of membranes. [16]
4. What are the characteristics of liquid membranes? [16]
5. Write a note on industrial dialyzers. [16]
6. (a) What is the difference between brackish water and sea water?
(b) What is pretreatment required for sea water to be treated by electro dialysis?
(c) Explain the conventional methods that could be employed for the treatment of sea water. [4+6+6]
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. (a) In what way distillation is different from other separation processes. Explain.
(b) Write short notes on leaching and adsorption. [8+8]
2. Write a brief note on Ultra filtration in enzyme processing. [16]
3. Write on the membranes used for Reverse Osmosis and explain their preparation methods. [16]
4. Liquid membranes have the potential for removing toxic substances from waste water. Explain. [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. What are the advantages of membrane processes for de watering liquid foods?[16]
8. What are the problems associated with membrane processing of gaseous mixtures? [16]

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1. Write short notes on
 - (a) Ion Exchange
 - (b) Adsorption
 - (c) Dialysis
 - (d) Electrodialysis. [4×4=16]
2. Write the principle of Ultra filtration, Explain commercial applications of ultrafiltration. [16]
3. Explain the method of preparation of porous membranes by swelling process. [16]
4. What are the applications of liquid membranes? [16]
5. Caustic soda can be recovered from hemi cellulose in the rayon process by dialysis. Explain. [16]
6.
 - (a) What is the difference between brackish water and sea water?
 - (b) What is pretreatment required for sea water to be treated by electro dialysis?
 - (c) Explain the conventional methods that could be employed for the treatment of sea water. [4+6+6]
7. Write a note on the feed pretreatment for Reverse Osmosis. Why the pretreatment is necessary. [16]
8. Write about the separation mechanisms of gas permeation. [16]
