

IV B.Tech. II Semester Supplementary Examinations, July -2005

MEMBRANE TECHNOLOGY

(Chemical Engineering)

Time: 3 hours

Max Marks: 80

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

1. Write a brief note on the significance of separation process in chemical process industries.
2. Write the advantages of membrane separation processes.
3. Write a note on the membranes for Electro dialysis.
4. Explain the steps to be carried out while preparing the liquid membranes according to the method of multiple emulsions.
5. What are the different flow patterns employed in continuous dialysers, Explain with the help of a neat sketch.
6. How are the membranes characterized for Electro dialysis.
7. Write a note on the feed pretreatment for Reverse Osmosis. Why the pretreatment is necessary.
8. What are the problems associated with membrane processing of gaseous mixtures?

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1. (a) Explain the following field separation processes for the separation of homogeneous mixtures with examples :
Thermal diffusion , Pressure diffusion, Gas Centrifugation, Ultra Centrifugation.
(b) Write short notes on micro filtration and Cyclone Separation.
2. Write the advantages of membrane separation processes.
3. Explain the leaching and swelling process employed for the preparation of porous membranes.
4. What are the different types of liquid membranes? Explain.
5. What are the different flow patterns employed in continuous dialysers, Explain with the help of a neat sketch.
6. Write short notes on
 - (a) Cation exchange membranes
 - (b) anion exchange membranes.
7. Describe concentration polarization in Reverse Osmosis using the model based on film theory. Develop the necessary equation for flux.
8. What are the problems associated with membrane processing of gaseous mixtures?

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1. Explain the terms membrane flux, Retention, concentration polarization, membrane fouling. What are the consequences of fouling.
2. Write the advantages of membrane separation processes.
3. Write short notes on Dense membranes and Porous membranes.
4. What are the characteristics of liquid membranes?
5. Write a note on industrial dialyzers.
6. What are the Industrial applications of Electro dialysis?
7. Explain the phenomena of concentration polarization in Reverse Osmosis.
8. Write the applications of gas permeation.

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1. Mention the equilibrium governed separation processes for separation of homogeneous mixtures. Explain the process of distillation with examples.
2. Write a brief note on Ultra filtration in enzyme processing.
3. How are the asymmetric porous membranes prepared.
4. What are the characteristics of liquid membranes?
5. What are the different flow patterns employed in continuous dialysers, Explain with the help of a neat sketch.
6. What are the Industrial applications of Electro dialysis?
7. What are the features of the concentration polarization in reverse osmosis?
8. Write the applications of gas permeation.
