

R09

Code No: 58044

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, April - 2018

MEMBRANE TECHNOLOGY

(Petroleum Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

1. Define membrane? What are the important parameters that need to consider in selecting the materials for synthesis of membranes? Explain in detail the classifications membrane processes. [15]
- 2.a) Discuss briefly preparation technique for immersion precipitation.
b) What do you mean by phase inversion membranes? Discuss in detail the preparation procedure and end applications. [7+8]
- 3.a) Define porosity? Distinguish porous and non-porous membranes with few examples.
b) Explain in detail the characterization of porous and non-porous membranes. [7+8]
4. What is the main driving force for mass transport through porous, non-porous, and ion exchange membranes? Explain in detail with a neat sketch. [15]
- 5.a) What do you mean by microfiltration? Explain in detail the membranes used for microfiltration keeping in view of industrial applications.
b) Write short notes on Fuel cells. [10+5]
6. Define Pervaporation. With a neat sketch, explain the pervaporation process with few example systems where pervaporation is advantageous over conventional techniques. [15]
7. What do you mean by fouling? Why membranes undergo fouling? What will be the surface texture of the membranes when they undergo fouling? Explain briefly the methods to reduce fouling. [15]
- 8.a) Explain the process design concepts of membrane separation techniques.
b) Compare and contrast plate and frame module vs. spiral wound modules. [7+8]

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