

**B.Tech Sem – VIII (2007 Course) (Chemical Engg.) : WINTER  
- 2017**

**SUBJECT: ELECTIVE-II MEMBRANE SEPARATION**

Day: **Wednesday**

Time: **02.30 PM TO 05.30 PM**

Date: **22/11/2017**

**W-2017-2643**

Max marks: 80

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**N.B:**

- 1) **Q. No. 1 & 5** are **COMPULSORY**. Out of remaining attempt ant **TWO** Questions from each section.
  - 2) Answers to the two sections should be written in **SEPARATE** answer books.
  - 3) Use of non- programmable **CALUCULATOR** is allowed.
  - 4) Assume suitable data if necessary.
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**SECTION-I**

- Q.1**
- a) What are merits and demerits of membrane processes? **(05)**
  - b) Describe factors affecting selection of separation processes. **(05)**
  - c) Explain membrane preparation by precipitation with controlled evaporation. **(04)**
- Q.2**
- a) What is separation processes? Explain the issues regarding separation processes. **(07)**
  - b) What is membrane? Define flux and rejection in membrane. **(06)**
- Q.3**
- a) What are different molecular weights of polymers? Explain effect of polymer molecular weight on membrane properties. **(07)**
  - b) How thermal, mechanical and chemical properties of inorganic membranes are different than polymeric membranes? **(06)**
- Q.4**
- a) How to prepare the membranes by phase inversion? Describe in details. **(10)**
  - b) What are zeolite membranes? Explain their preparation and properties in details.

**SECTION-II**

- Q.5** Write short notes on following:
- a) Solute rejection method for characteristics of porous membrane **(05)**
  - b) Purification of ethanol by pervaporation **(05)**
  - c) Methods to reduce fouling **(04)**
- Q.6**
- a) What is electron microscopy? How to analyze membrane by electron microscopy? **(07)**
  - b) What are the physical methods for analysis of non- porous membranes? **(06)**
- Q.7**
- a) Explain the application of ultrafiltration membranes in water purification. What are its industrial and domestic applications? **(07)**
  - b) What is piezodialysis? Explain it with an industrial application. **(06)**
- Q.8**
- a) What is concentration polarization? How it affects membrane performance? **(07)**
  - b) What is membrane fouling? How it affect membrane properties? **(06)**