

**B.TECH. SEM -VII (CHEMICAL 2014 COURSE (CBCS) : WINTER -
2017**

SUBJECT: ELECTIVE III: MEMBRANE SEPARATION

Day: **Friday**
Date: **12/01/2018**

W-2017-2251

Time: **02.30 PM TO 05.30 PM**
Max Marks: **60**

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Use of non-programmable **CALCULATOR** is allowed.
 - 4) Draw neat and labeled diagrams **WHEREVER** necessary.
 - 5) Assume suitable data, if necessary.
-

Q.1 What is the importance of mechanical, thermal and chemical stability of membranes? How they are dependent upon membrane mechanical properties? **(10)**

OR

Q.1 What is membrane? What is the importance of permeation, retention and selectivity properties of membranes? **(10)**

Q.2 How membranes are prepared by phase inversion? Explain their preparation in details. **(10)**

OR

Q.2 What are the methods of electron microscopy for analysis of porous membranes? Explain them and their importance. **(10)**

Q.3 What are transport mechanisms in porous membranes? Explain them. **(10)**

OR

Q.3 What is nano-filtration? Explain their membrane preparation, properties with industrial applications. **(10)**

Q.4 What is free volume theory? explains transport of solute through non-porous membranes? **(10)**

OR

Q.4 What is commercial importance of gas separation? Explain its membrane properties and industrial importance. **(10)**

Q.5 What is the principle behind membrane distillation? Explain its industrial significance. **(10)**

OR

Q.5 How transport occurs during electro dialysis? Explain the industrial applications and importance of electro dialysis. **(10)**

Q.6 What are important criteria for selection of processes for any particular separation application? **(10)**

OR

Q.6 What is cascade operation? What is its significance during industrial separation? **(10)**

* * * * *