

Unit IV

7. Describe reactive distillation in detail along with their advantages, disadvantages and application. **15**
8. Explain supercritical fluid extraction in detail along with their advantages, disadvantages and application. **15**

No. of Printed Pages : 04

Roll No.

BB-182

M. Tech. EXAMINATION, Dec. 2017

(Second Semester)

(B. Scheme) (Re-appear Only)

(CHE)

CHE-504-B

ADVANCED SEPARATION PROCESSES

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What is the significance of membrane separation processes for chemical engineers ? **5**
(b) How can membranes be characterized ? Explain in detail. **10**
2. Explain the transport mechanism through porous membranes in detail. **15**

Unit II

3. What are various electrically and thermally driven membrane processes ? Explain in detail. **15**
4. (a) Explain Membrane reactors in detail. **5**
(b) It is desired to pass water at 70°F through a supported, polypropylene membrane with a skin of 0.003 cm thickness and

35° porosity, at the rate 200 m³/m² day. The pores can be considered as straight cylinders of uniform diameter equal to 0.2 micron. If the pressure on the downstream side of the membrane is 150 kPa, estimate the required pressure on the downstream side of the membrane is 150 kPa, estimate the required pressure on the upstream side of the membrane. The pressure drop through the support is negligible. **10**

Unit III

5. What do you mean by Adsorption ? Explain different types of adsorbents, their preparation and properties. **15**
6. What do you mean by adsorption isotherms ? Explain in detail various types of isotherms and their significance. **15**