

B.E./B.TECH. Degree Examination, December 2020

Semester - VI

**CH16002-MODERN SEPARATION PROCESSES**

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. If only 5% of Ethylene is converted to Ethylene glycol, why is there a need of separation process?
  - a) To feed more reactant to the reacting mixture
  - b) To remove the ethylene glycol formed
  - c) To recover the unreacted Ethylene Glycol
  - d) To start an intermediate reaction
2. What is the third phase in all the two-phase systems?
  - a) The adsorbent      b) The interface      c) The container      d) The atmosphere
3. What is a eutectic point?
  - a) A temperature at which the mixture boils
  - b) The temperature at which the mixture gets out of equilibrium
  - c) The temperature at which the components have same molar flow rates
  - d) The temperature at which the mixture freezes
4. What is needed because of crystals occluding liquid?
  - a) Centrifugation      b) Distillation      c) Drying step      d) Decantation
5. Why is molecular cutoff important in membrane processes? How is it related to solute rejection?
6. How is a biomimetic membrane different from biological membrane? Justify your answer.
7. Why maintaining electro-neutrality is important in electro dialysis?
8. Distinguish between extraction and super critical extraction.

**PART B - (4 X16 = 64 marks)**

09. (a) (i) Name the different driving forces in membrane processes with (04) examples.
- (ii) Summarize the uses of different membrane modules in membrane (12) processes.

**(OR)**

(b) Compare extractive and azeotropic distillation. **(16)**

10. (a) Write short notes on the following: **(16)**

(i) Membrane selectivity (ii) Gravity separation

(iii) Symmetric and asymmetric membranes (iv) chromatography

**(OR)**

(b) Discuss any one case study of industrial membrane separation processes using conventional methods. **(16)**

11. (a) Explain the various adsorption isotherms with equations. **(16)**

**(OR)**

(b) Enumerate the various parameters of affinity and immunoaffinity chromatography. **(16)**

12. (a) Explain the principle of electrodialysis along with an application. Also explain the phenomenon of electrodialysis reversal. **(16)**

**(OR)**

(b) With the help of flow sheets, explain the process concept of single stage and multistage supercritical fluid extraction. **(16)**