

Q.31 What is difference between microfiltration and ultrafiltration?

Q.32 How will you classify the solids on the basis of change in their solubility with temperature?

### SECTION-D

**Note:** Long answer type questions. Attempt any three questions out of four questions. (3x10=30)

Q.33 How will classify adsorption? Discuss each type in detail along with the effect of temperature on their efficiency in detail.

Q.34 Describe the construction, working & advantages of a DTB crystallizer with the help of a neat diagram.

Q.35 Describe the principle and operation of azeotropic distillation in detail by taking suitable example.

Q.36 Explain the following detail.

- a) Perforated Plate Extraction Tower.
- b) Reverse Osmosis process.

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**5th Sem. / Chem. Engg. (P & P)**

**Subject : Mass Transfer - II**

Time : 3 Hrs.

M.M. : 100

### SECTION-A

**Note:** Objective type questions. All questions are compulsory (10x1=10)

Q.1 Name the physical property of components which is used to separate them by distillation operation.

Q.2 What should be the value of relative volatility for separating constituents of mixture by the distillation operation.

Q.3 What is name given to the liquid condensate returned back to fractionating column.

Q.4 Name a method which is used to develop relationship between number of trays in distillation column, liquid/vapour ratios and product composition.

Q.5 Name the term which is used to describe the residual liquid from which solute has been removed during liquid extraction operation.

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- Q.6 Name the mass transfer operation used to recover vegetable oils from soybean seeds.
- Q.7 Name the term which is used to describe the two phase mixture of mother liquor and crystals of all sizes obtained from the crystallizer.
- Q.8 Write any one unit for supersaturation.
- Q.9 Write any one industrial adsorbent.
- Q.10 What is full form of term SPM used in membrane separation processes?

### SECTION-B

**Note:** Very short answer type questions. Attempt any ten questions out of twelve questions. (10x2=20)

- Q.11 Define bubble point.
- Q.12 Define vapor pressure.
- Q.13 What are tie lines?
- Q.14 Define relative volatility.
- Q.15 What is saturated solution?
- Q.16 What is ternary mixture?
- Q.17 Define the supersaturation.
- Q.18 What are isotherms?

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- Q.19 Define the chemisorption.
- Q.20 What is invariant crystal?
- Q.21 Define the membrane separation technique.
- Q.22 Define extract in context of liquid extraction mass transfer operation.

### SECTION-C

**Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x5=40)

- Q.23 Describe simple distillation in brief.
- Q.24 What is difference between boiling point & bubble point?
- Q.25 What is feed tray? Discuss its importance.
- Q.26 What is reflux ratio? Discuss its significance.
- Q.27 Explain any two industrial applications of liquid extraction mass transfer operation in brief.
- Q.28 Discuss leaching equipment involving leaching through stationary beds in brief.
- Q.29 Discuss different methods of generating supersaturation.
- Q.30 Discuss the different factors affecting crystallization.

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