Question Bank (G scheme)

Name of subject: Mass Transfer Operation **Unit Test: II**
Subject code: 17648 **Course: CH**
Semester:VI

Chapter 3 (weightage=14)

3 marks question

1. Draw a neat diagram of mechanically agitated vessel for gas absorption
2. Define gas absorption. Explain the types of absorption with examples.
3. What are the essential characteristics of tower packings?

4 marks question

1. Draw velocity vs pressure drop in a packed column and show loading and flooding point
2. Gas containing 2% by volume solute A is fed to an absorption tower at a rate of 0.35 m^3/sec at 299K and 106.658 KPa pressure. 95% of original solute is removed by absorbing it in solvent B. Solvent containing 0.005 mol fraction of solute enters the tower at top and exit liquid stream from absorption tower contains 0.12 mol A per mol B. Find out the flow rate of liquid solvent entering the tower.
3. Explain the criteria for selection of solvent for gas-liquid absorption process.
4. Write material balance for absorption tower for one component.

Chapter 4(weightage=12)

3 marks question

1. Compare distillation and extraction as separation technique

2. Define 1. Distribution coefficient 2. Selectivity

3. What is liquid- liquid extraction? What is extract phase and raffinate phase?

4 marks question

4. Give any four selection criteria for solvent used for extraction.

5. Explain triangular diagram

6. Explain the construction of rotating disc contactor used in extraction.

7. With a diagram explain the working of rotating disc contactor used in
extraction.

Chapter 5 (weightage=20)

3 marks questions

1. Differentiate between drying and evaporation.

2. What are the factors affecting rate of drying and howthese affect the rate of

drying?

3. Draw rate of drying curve and mark the following

a) constant rate period b) falling rate period.

c) critical moisture content d) equilibrium moisture content

4 marks question

4. Draw a neat diagram of drum dryer and label the parts

5. With a neat diagram explain the construction of tray dryer.

6. Derive the expression for time required to dry the material for constant rate
period.

7. Derive the expression for time required to dry the material for falling rate

period.

8. Define a) free moisture b) bound moisture c) absolute humidity

9. Explain the working of spray dryer

10. A 50 Kg batch of granular solids containing 25 % moisture is to be dried in a tray drier to 12% moisture by passing a stream of air. If rate of drying is 0.0008 Kgmoisture/m^2sec,and critical moisture content is 10%,calculate drying time. Area available for drying is 1 m^2.

Chapter 6(weightage=12)

3 marks question

1. Describe the mechanism of nucleation and crystal growth

2. What are the different methods of achieving super saturation?

3. State the effect of slow cooling and rapid cooling on crystal formation.

4 marks question

4. Draw a neat diagram of agitated tank crystallizer and explain its working.

5. Explain solubility curves

6. Draw a neat diagram of Oslo Evaporative Crystallizer.

7. Explain the construction of Swenson Walker crystallizer.

8. What will be yield of $Na_2S_2O_3.5H_2O$ crystals when 100 Kg of 48% $Na_2S_2O_3$solution is cooled to 293 K. Solubility of $Na_2S_2O_3$ is 70 parts per 100 parts water at 293 K.