

- Q.24 Discuss in brief about two film theory of mass transfer.
- Q.25 Describe the working of spray chambers.
- Q.26 Explain the working of tray dryers with neat diagram.
- Q.27 Describe humidity chart. Write any one use of humidity chart.
- Q.28 Enlist the points to be remember while choosing a solvent for absorption.
- Q.29 Define humid heat, humid volume and dew point.
- Q.30 Write the use of tower packing with their types and properties.
- Q.31 Explain in brief about rate of drying curve with its neat diagram.
- Q.32 Explain Raoult's law and henry's law.
- Q.33 Differentiate between bound and unbound moisture content.
- Q.34 Write any four applications of drying operation.
- Q.35 Discuss any one of the following
- Overall mass transfer coefficient
 - Film mass transfer coefficient

Section-D

Note: Long answer questions. Attempt any two question out of three Questions. (2x10=20)

- Q.36 Explain in detail about the different types of problems encountered in packed towers.
- Q.37 What do you mean by drying? Explain construction and working of rotary dryer with the help of neat diagram.
- Q.38 What is the working principle of cooling towers? Describe the different cooling tower arrangement with neat diagrams

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Roll No.

4th Sem. Branch: Chemical Engineering, P & P Sub : Mass Transfer-I

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice Questions. All Questions are compulsory. (10x1=10)

- Q.1 Diffusion means
- Accumulation of particles on solid surface
 - Movement of particles through semi permeable membrane
 - Movement of particles from high concentration to low concentration
 - None of these
- Q.2 The mutual solubility of two liquids
- Decrease with increase in temperature
 - Increase with increase in temperature
 - Remain constant
 - None of the above
- Q.3 Which theory explains mass transfer across a thin stagnant film?
- Penetration theory
 - Film theory
 - Surface renewal theory
 - None of these

- Q.4 What type of packing is used in absorption towers to enhance contact surface area?
- Raschig rings
 - Spray nozzles
 - Bubble caps
 - Tray columns
- Q.5 What is the moisture content of a material on a dry basis?
- The weight of moisture per unit weight of dry solid
 - The weight of moisture per unit weight of wet solid
 - The total weight of moisture
 - The percentage of moisture by volume
- Q.6 What does the drying rate curve indicate?
- The relationship between temperature and time
 - The relationship between drying rate and moisture content
 - The relationship between air flow and drying time
 - The relationship between pressure and drying time
- Q.7 What is the term for the moisture that remains in a solid after drying to equilibrium under a given set of conditions?
- Free moisture content
 - Bound moisture content
 - Critical moisture content
 - Equilibrium moisture content
- Q.8 What is the definition of unbound moisture content?
- Moisture content in equilibrium with the surrounding air
 - Moisture that is not chemically bonded to the material
 - Moisture that cannot be removed by drying
 - Moisture that is free to evaporate

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- Q.9 During which period of drying does the rate of drying remain constant?
- Falling rate period
 - Constant rate period
 - Initial rate period
 - Final rate period
- Q.10 What is the term for the height of a column based on the overall mass transfer coefficient?
- HTU
 - NTU
 - HETP
 - None

Section-B

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

- Q.11 Define Fick's law of diffusion.
- Q.12 What do you mean by mass transfer.
- Q.13 Define diffusion.
- Q.14 Expand NTU.
- Q.15 What are the units of humidity?
- Q.16 Write the formula of Henry's law.
- Q.17 What do you understand by equilibrium.
- Q.18 Name any two mass transfer theories.
- Q.19 Define desorption.
- Q.20 Define wet bulb temperature.

Section-C

Note: Short answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)

- Q.21 What are mass transfer operations? Write in brief about any two operations.
- Q.22 What is diffusion in mass transfer? Explain eddy diffusion.
- Q.23 Derive the equation for steady state gas phase equimolecular counter diffusion.

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