Q25 Write the penetration theory of mass transfer.

Q.26 Explain the working of tray dryers.

Q.27 Write four uses of humidity chart.

Q.28 Draw any two cooling tower arrangements.

Q.29 Differentiate between bound and unbound moisture content.

Q.30 Write condition of equilibrium between gas and liquid.

Q.31 Express the relation between film and overall mass tranfer coefficient.

Q.32 Write the condition to be followed while choosing a solvent for aborption.

Q.33 Define humid heat, humid volume and dew point.

Q.34 What are tower packings. Write their uses and properties.

Q.35 Discuss any one of the following

(i) Channeling (ii) Raoult's Law

SECTION-D

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

Q.36 What do you understand by drying? Explain construction and working of rotary dryer with the help of neat diagram.

Q.37 Discuss working of the cooling tower in brief. Describe about different cooling tower arrangements in detail with their neat sketch.

Q.38 Differentiate between any two of the following

i) Forced & Eddy diffusion

ii) Absorption & Desorption

iii) Humidification & Dehumidification

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4th Sem. / Chem, P&P
Subject : Mass Transfer I

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 Mass diffusivity has the same dimensions as _____.

a) Density b) Concentration

c) Dynamic Viscosity d) Kinematic Viscosity

Q.2 According to penetration theory mass transfer coefficient is directly proportional to

a) $D_{AB}^{2.5}$ b) D_{AB}^{2}

c) $D_{AB}^{0.5}$ d) D_{AB}

Q.3 Separation of a binary mixture of gases by absorption in a liquid solvent depends upon their differences in

a) Solubility b) Relative volatility

c) Density difference d) None of these

Q.4 Unbound moisture in a solids is that liquid which exert an equilibrium vapour pressure

a) Equal to that of pure liquid at a given temperature

b) Greater than that of pure liquid at a given temperature

c) Less than that of pure liquid at a given temperature

d) Equal to or less than that of pure liquid at a given temperature

Q.5 Free moisture content

a) Is that moisture contained by a substance in excess of the equilibrium moisture

b) Is that liquid which is removable at a given temperature

c) May include bound and unbound moisture

d) All of the above

Q.6 Milk powder is made from milk by drying in a

a) Drum drier b) Spray dryer

c) Spouted bed drier d) Rotary drier

Q.7 The rate of drying during constant rate period

a) Increase with increase in air Humidity

b) Decrease with increase in air Humidity

c) Unaffected by increase in Air Humidity

d) Increase and then decrease with increase in air Humidity

Q.8 The diffusivity of a constituent A in solution B has the units

a) m/s b) m

c) m^2/s d) m^2

Q.9 During the constant rate period of drying surface evaporation of _____ occurs

a) Unbound moisture

b) Bound moisture

c) Both bound and unbound moisture

d) Zero moisture

Q.10 Diffusion means

a) Accumulation of particles on solid surface

b) Movement of particles through semi permeable membrane

c) Movement of particles from high concentration to low concentration

d) None of these

SECTION-B

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

Q.11 Write names of any two mass transfer operations.

Q.12 Define desorption.

Q.13 What is wet bulb temperature.

Q.14 Write the units of humidity.

Q.15 Expand HTU.

Q.16 Define eddy diffusion.

Q.17 Write the full form of HETP.

Q.18 What is dew point.

Q.19 Write the formula of Henry's law.

Q.20 Define Fick's law of diffusion.

SECTION-C

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

Q.21 Discuss the importance of mass transfer operation in brief.

Q.22 Define the term humidity. Discuss two different ways to express humidity.

Q.23 Describe the working of spray chambers.

Q.24 Draw and explain in brief rate of drying curve.