Q.27 Define Fick's law of diffusion also write its mathematical relation
Q.28 Describe humidity chart
Q.29 Write the working of rotary dryer
Q.30 Discuss the working of spray ponds
Q.31 Explain gas desorption mass transfer operation with the help of suitable example.
Q.32 What are the differences in batch dryer and continuous dryer?
Q.33 Explain Raoult's law and henry's law
Q.34 Differentiate between humidification and dehumidification with example.
Q.35 Discuss any one of the following
i) Overall mass transfer coefficient
ii) Eddy diffusion

SECTION-D

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

Q.36 What is drying? Explain the construction and working of tray dryer with the help of neat diagram
Q.37 Write about difference type tower packing. Explain the different problems encountered in packed towers
Q.38 What is the basic concept of cooling in cooling towers? Describe the different cooling tower arrangement.

Roll No. .....

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

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Diffusion is a process of
a) Movement of particles from high concentration to low concentration
b) Movement of particles through semi permeable membrane
c) Accumulation of particles on solid surface
d) None of these

Q.2 The diffusivity has the same dimensions as
a) Density b) concentration
c) kinematic viscosity d) Dynamic viscosity

Q.3 According to film 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.4 Which of the following is very important to separate a mixture of two volatile liquids by distillation
a) Solubility b) Relative volatility
c) Density difference d) none of these

Q.5 The mutual solubility of two liquids
a) Decrease with increase in temperature

b) Increase with increase in temperature
c) remains constant
d) None of the above

Q.6 Bound 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.7 The rate of drying during constant-rate period
a) Increase with increase in air temperature
b) Decrease with increase in air temperature
c) Unaffected by increase in air temperature
d) increase and than decrease with increase in air temperature

Q.8 Rotary driers are
a) used to make milk powder
b) used to make detergent
c) suitable for handling free flowing granular materials
d) Suitable for handling sticky materials

Q.9 At a constant temperature, the gas solubility increases with _____ In pressure.
a) highly decrease b) Increase
c) no change d) slightly decrease

Q.10 The temperature at which a vapour gas mixture becomes saturated when cooled at constant total pressure out of contact with a liquid is called
a) Bubble point b) wet bulb temperature
c) dry bulb temperature d) dew point

SECTION-B

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

Q.11 Define mass transfer.
Q.12 Write an example of gas absorption.
Q.13 Expand HETP
Q.14 Write any one use of humidity chart
Q.15 Define dry bulb temperature
Q.16 Write the full form of NTU
Q.17 Name any two mass transfer theories
Q.18 What do you understand by equilibrium
Q.19 Write names of any two packing used in packed towers
Q.20 Draw any one cooling tower arrangement

SECTION-C

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

Q.21 Write any two mass transfer operation with one example each
Q.22 Explain the role of diffusion in mass transfer
Q.23 Define loading and channeling.
Q.24 Explain rate of drying curve with its neat diagram
Q.25 Write about properties of tower packing
Q.26 Discuss about the factors to be considered before selecting solvent for absorption