

No. of Printed Pages : 4  
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220642

4th Sem.  
Branch : Chemical (Pulp & Paper)  
Sub. Mass Transfer

Time : 3 Hrs.

M.M. : 60

#### SECTION-A

**Note: Multiple choice type Questions. All Questions are compulsory. (6x1=6)**

- Q.1 HTU means
- a) Height of temperature Unit
  - b) Height of transfer Unit
  - c) High time unit
  - d) None
- Q.2 Rate of drying is constant at :
- a) Falling rate period
  - b) Equilibrium period
  - c) Constant rate period
  - d) Transitional period
- Q.3 Excessive liquid flow in a packed column causes
- a) Flooding
  - b) Channeling
  - c) Weeping
  - d) Loading
- Q.4 The theory that explain mass transfer across a thin stagnant film
- a) Penetration theory
  - b) Film theory
  - c) Surface Renewal
  - d) All of the above

- Q5. Humidity chart help of determine  
 a) Dry bulb temperature    b) Wet bulb temperature  
 c) Dew point                d) All of the above
- Q6. Drying of solids involves \_\_\_\_\_ transfer.  
 a) Heat                      b) Mass  
 c) Heat and Mass            d) None

### **SECTION-B**

**Note: Objective type questions. All questions are compulsory.** **(6x1=6)**

- Q.7 Write the formula of fick's law of diffusion.
- Q.8 Define dry bulb temperature.
- Q.9 Write name of any two mass transfer operations.
- Q.10 Write the formula for measuring wet moisture content.
- Q.11 What are the units of humidity?
- Q.12 Write the full form of HETP.

### **SECTION-C**

**Note: Short answer type Questions. Attempt any eight questions out of ten Questions.** **(8x4=32)**

- Q.13 Explain the penetration theory of mass transfer.
- Q.14 Derive the relation for diffusion through stationary gas.
- Q.15 Describe the different cooling tower arrangements.
- Q.16 Explain time of drying with its graphical presentation.
- Q.17 Write a note on types of tower packing.
- Q.18 Explain rate of drying curve.
- Q.19 Describe about humidity chart

- Q.20 What do you mean by adsorption write its industrial applications.
- Q.21 Write about the problems encountered in packed tower.
- Q.22 Write about molecular and eddy diffusion.

### **SECTION-D**

**Note: Long answer questions. Attempt any two questions out of three Questions.** **(2x8=16)**

- Q.23 Explain the construction and working of tray dryer with the help of neat diagram.
- Q.24 With the help of neat diagram discuss the working of natural draft cooling tower.
- Q.25 Write short note on any two of the following:  
 a) Packed column  
 b) Overall mass transfer coefficient  
 c) Height of transfer units  
 d) Humidity chart