

- Q.18 What is absorption and write the condition of equilibrium between gas and liquid
- Q.19 Explain the term humidity ? Write any two use of humidity chart
- Q.20 Discuss any two problems encountered in packed column
- Q.21 Explain in brief about bound and unbound moisture contents.
- Q.22 Discuss the types of tower packing with its properties.

#### SECTION-D

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

- Q.23 What is tower packing? Explain different types of tower packing and write about the properties of tower packing.
- Q.24 What do the drying means. Explain the working of rotary dryer with the help of neat diagram
- Q.25 Write short note on any two of the following:
- percentage humidity
  - Moisture content on dry basis
  - Wet bulb temperature
  - Humid volume

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Roll No. ....

#### 4th Sem / Chemical ( Pulp & Paper)

#### Subject :Mass Transfer

Time : 3 Hrs.

M.M. : 60

#### SECTION-A

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

- Q.1 What is the role of diffusion in mass transfer
- To equalize temperature
  - To mix different phases
  - To transfer mass from high concentration to low concentration
  - To reduce pressure differences
- Q.2 What does a humidity chart help to determine?
- Dry bulb temperature
  - Wet bulb temperature
  - Dew point
  - All of the above

Q.3 What is the significance of the term “NTU” in mass transfer operations?

- a) Number of transfer units
- b) Nominal transfer unit
- c) Net transfer unit
- d) Normalized transfer unit

Q.4 What is the function of a cooling tower?

- a) Humidify air
- b) Dehumidify air
- c) Cool water by contacting with air
- d) Spray dry liquids

Q.5 Which problem is associated with excessive liquid flow in a packed column?

- a) Flooding
- b) Channeling
- c) Weeping
- d) Loading

Q.6 The term ‘humidity’ refers to:

- a) The temperature of the air
- b) The amount of moisture in the air
- c) The pressure of the air
- d) The volume of the air

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## SECTION-B

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

Q.7 Define eddy diffusion

Q.8 Write the full form of HTU

Q.9 Draw any one cooling tower arrangement

Q.10 Write the affect of temperature on adsorption

Q.11 Write any one application of adsorption operation

Q.12 Define weeping

## SECTION-C

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

Q.13 Drive the equation of gas phase equimolecular counter diffusion

Q.14 Discuss film theory of mass transfer.

Q.15 What factors should be keep in mind while selecting a solvent in gas absorption?

Q.16 Explain the working principle of natural draft cooling tower with help of neat diagram.

Q.17 Discuss rate of drying curve.

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