

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA ENGINEERING – SEMESTER – V • EXAMINATION – WINTER 2016**

**Subject Code: 3350502****Date: 21- 11- 2016****Subject Name: Mass Transfer - II****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

- Q.1** Answer any seven out of ten. **14**
1. Classify equipment for gas-liquid operation.
  2. Define Relative Volatility.
  3. Define minimum reflux ratio and total reflux ratio.
  4. Define absolute humidity and Relative humidity.
  5. Define Wet bulb and Dry bulb temperature.
  6. State the advantages of continuous drying over batch drying.
  7. Define: Crystallization and Drying
  8. Define nucleation & crystal growth.
  9. Write the principle of Ion exchange.
  10. Write any two industrial applications of adsorption.
- Q.2** (a) Discuss the operating problems of Tray tower. **03**
- OR
- (a) Explain mechanically agitated vessel. **03**
- (b) Discuss the importance of gas-liquid operation. **03**
- OR
- (b) Explain different types of packing. **03**
- (c) Derive Rayleigh equation for batch distillation. **04**
- OR
- (c) Describe McCabe and Thiele method for enriching section. **04**
- (d) Differentiate extractive and azeotropic distillation. **04**
- OR
- (d) Describe flash vaporization. **04**
- Q.3** (a) Differentiate maximum and minimum boiling azeotropes. **03**
- OR
- (a) Explain the principle of steam distillation with example. **03**
- (b) Explain Meir's theory of supersaturation. **03**
- OR
- (b) Define: Solubility, Magma, Seeding **03**
- (c) Derive equation for drying time for constant rate period **04**
- OR
- (c) Classify drying equipments. **04**
- (d) A wet solid is to be dried from 93% to 7% moisture on wet basis. Compute the moisture to be evaporated per 1 ton of dried product. **04**
- OR
- (d) Explain construction and working of Tray drier. **04**

<b>Q.4</b>	(a) Explain Freundlich isotherm for adsorption.	<b>03</b>
	OR	
	(a) Compare physical adsorption and chemisorption.	<b>03</b>
	(b) Explain the principle of pressure swing adsorber with neat sketch.	<b>04</b>
	OR	
	(b) Explain Swenson Walker crystallizer with neat sketch.	<b>04</b>
	(c) What is psychrometric chart? Describe in detail the information & calculation done by using it.	<b>07</b>
<b>Q.5</b>	(a) Explain Rate of Drying curve.	<b>04</b>
	(b) Explain principle & types of cooling tower.	<b>04</b>
	(c) Explain super saturation and methods to get it.	<b>03</b>
	(d) Explain vapor liquid equilibria.	<b>03</b>

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