

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018****Subject Code: 2160501****Date:16/11/2018****Subject Name: Mass Transfer Operation - II****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

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|------------|-----|-------------------------------------------------------------------------------------------|-----------|
| <b>Q.1</b> | (a) | Explain separation in Enriching and Stripping section of continuous rectification column. | <b>03</b> |
|            | (b) | Define : Reflux ratio, Total reflux, minimum reflux                                       | <b>04</b> |
|            | (c) | Explain McCabe and Thiele method for tray calculation.                                    | <b>07</b> |
| <b>Q.2</b> | (a) | Explain feed tray location.                                                               | <b>03</b> |
|            | (b) | Draw the location of q line for various thermal condition of feed.                        | <b>04</b> |
|            | (c) | Derive equation of q-line.                                                                | <b>07</b> |
|            |     | <b>OR</b>                                                                                 |           |
|            | (c) | Describe Azeotropic distillation briefly.                                                 | <b>07</b> |
| <b>Q.3</b> | (a) | Define : Molal Absolute humidity, Grosvenor humidity, Dry-bulb temperature.               | <b>03</b> |
|            | (b) | Describe types of cooling tower shortly.                                                  | <b>04</b> |
|            | (c) | Derive the equation of adiabatic saturation curve.                                        | <b>07</b> |
|            |     | <b>OR</b>                                                                                 |           |
| <b>Q.3</b> | (a) | Define : Relative saturation, Percentage saturation, Dew point                            | <b>03</b> |
|            | (b) | Describe spray chambers shortly.                                                          | <b>04</b> |
|            | (c) | Derive the expression for wet bulb depression.                                            | <b>07</b> |
| <b>Q.4</b> | (a) | Define : Moisture content on wet basis, moisture content on dry basis, bound moisture.    | <b>03</b> |
|            | (b) | Describe drum dryer shortly.                                                              | <b>04</b> |
|            | (c) | Explain liquid diffusion within the solid.                                                | <b>07</b> |
|            |     | <b>OR</b>                                                                                 |           |
| <b>Q.4</b> | (a) | Define : Unbound moisture, equilibrium moisture, free moisture.                           | <b>03</b> |
|            | (b) | Classify rotary dryer and explain any one shortly.                                        | <b>04</b> |
|            | (c) | Explain typical rate of drying curve under constant drying conditions.                    | <b>07</b> |
| <b>Q.5</b> | (a) | Explain physical adsorption.                                                              | <b>03</b> |
|            | (b) | Explain adsorption from concentrated solutions.                                           | <b>04</b> |
|            | (c) | Describe adsorption wave briefly.                                                         | <b>07</b> |
|            |     | <b>OR</b>                                                                                 |           |
| <b>Q.5</b> | (a) | Explain chemisorptions.                                                                   | <b>03</b> |
|            | (b) | Explain adsorption of solute from dilute solutions.                                       | <b>04</b> |
|            | (c) | Describe working of pressure swing absorber.                                              | <b>07</b> |

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