Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–V EXAMINATION – WINTER 2015**

**Subject Code: 151301** **Date:15/12/2015**

**Subject Name: Elements of Chemical Engineering**

**Time: 10:30am to 1:00pm** **Total Marks: 70**

**Instructions:**

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

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|---|---|---|---|
| **Q.1** | **(a)** | Define. 1) Molecularity 2) Space Time 3) Space Velocity | **07** |
| | **(b)** | Define the terms. 1) Dispersion Number 2) Thermodynamic Laws 3) Mean Residence Time | **07** |
| **Q.2** | **(a)** | Briefly explain Arrhenius' Law. | **07** |
| | **(b)** | Short note on temperature dependency from collision theory. | **07** |

**OR**

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|---|---|---|---|
| | **(b)** | Temperature dependency from thermodynamics. Describe | **07** |
| **Q.3** | **(a)** | Give classification of reactions. | **07** |
| | **(b)** | Enlist & Explain variables that affecting the rate of reactions. | **07** |

**OR**

| | | | |
|---|---|---|---|
| **Q.3** | **(a)** | Describe different definitions of reaction rate. | **07** |
| | **(b)** | Differentiate: - Single and multiple reactions. | **07** |
| **Q.4** | **(a)** | Distinguish the terms: - Elementary and non- elementary reactions. | **07** |
| | **(b)** | On the basis of applications give a short note on plug flow reactor. | **07** |

**OR**

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|---|---|---|---|
| **Q.4** | **(a)** | Give a brief note on C – curve an experimental method. | **07** |
| | **(b)** | Explain. F- curve – Experimental method. | **07** |
| **Q.5** | **(a)** | With advantages and disadvantages compare to other reactors explain continuous stirrer tank reactor. | **07** |
| | **(b)** | Draw a neat sketch of ideal batch reactor with explanation. | **07** |

**OR**

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|---|---|---|---|
| **Q.5** | **(a)** | Shortly explain fluidized bed reactor. | **07** |
| | **(b)** | Give a brief note on design of reactors. | **07** |

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