Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**ME SEMESTER II EXAMINATION – SUMMER 2017**

**Subject Code: 2725010** **Date:25/05/2017**

**Subject Name: SIMULATION MODELING OF MANUFACTURING SYSTEM**

**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.**

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|---|---|---|---|
| Que-1 | (a) | Explain the concept of Discrete-Event Simulation. | **07** |
| | (b) | What is simulation and mention different typesof simulation models and explain about numericalcomputation technique for continuous model. | **07** |
| Que-2 | (a) | Explain the terms: (a) entity (b) attribute (c) activity (d) event & (e) state in the system simulation context. | **04** |
| | | Name several entities, attributes, activities, events & state variables of a typical automatic teller machine (ATM)? | **03** |
| | (b) | Enlist thepossible validation techniques in orderof increasingcost-to value ratios. | **07** |
| | | **OR** | |
| | (b) | How the simulation of outputdata analysis bedone inpractice? | **07** |
| Que-3 | (a) | Describe the need for output data analysis. Explain "terminating simulation" with suitable example. | **07** |
| | (b) | What is inverse transform technique? Explain how it is used for producing random variants for exponential distribution and uniform distribution. | **07** |
| | | **OR** | |
| Que-3 | (a) | Explain and derive its mean and variance. Give some applications of Weibull distribution in manufacturing systems | **07** |
| | (b) | Describeabout modelingand various techniques for verification. | **07** |
| Que-4 | (a) | Enlist the techniques for increasing the validity and credibility of a simulation model. Explain any one with suitable example. | **07** |
| | (b) | Explain Inverse Transform techniques for random variate generation with suitable example. | **07** |
| | | **OR** | |
| Que-4 | (a) | Enlist theadvantagesand disadvantages ofusinga simulationpackages over generalpurposeprogramming languages. | **07** |
| | (b) | What is "Queuing System"? Give at least three examples of real world queuing system with their servers and Customers. | **07** |
| Que-5 | (a) | Whatare thedesirable software features? Explainany two of them. | **07** |
| | (b) | Explain the following queuing system characteristics :(i) Calling population (ii) System capacity (iii) Arrival process (iv) Queue behavior and discipline (v) Service time and service mechanism. | **07** |

**OR**

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| Que-5 | (a) | What are Input parameters to be consider in flexible manufacturing systems. | **07** |
| | (b) | Discuss about a simulation of automated warehouse system. | **07** |

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