

**M. Tech.-I (Mechanical CAD/CAM) (CBCS – 2015 Course) :**  
**WINTER - 2018**

**SUBJET: MODELING AND SIMULATION**

Day: Wednesday  
Date: 05/12/2018

**W-2018-3121**

Time: 11.00 AM TO 02.00 PM  
Max Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Both the sections should be written in the **SEPARATE** answer book.

**SECTION-I**

**Q.1** What is real time simulation? **(10)**

**OR**

**Q.1** Explain the concept of random number generation.

**Q.2** Explain steps in simulation. **(10)**

**OR**

**Q.2** Evaluate  $\int_0^{10} x^3 dx$  using monte carlo method. Take any 20 random numbers.

**Q.3** Explain the exponential distribution. **(10)**

**OR**

**Q.3** Compute the variance and standard derivation for the probability distribution if die is tossed.

**SECTION-II**

**Q.4** Write note on simulation of suspension system. **(10)**

**OR**

**Q.4** Explain growth models.

**Q.5** Explain different terms used in inventory simulation. **(10)**

**OR**

**Q.5** The data for single channel queuing system is

Inter arrival time		Service time	
Minutes	Probability	Minarets	Probability
2	0.15	1	0.1
4	0.23	3	0.22
6	0.35	5	0.35
8	0.17	7	0.23
10	0.10	9	0.10

Simulate the system for 60 minutes. Random numbers ore 93, 14, 72, 10, 21, 81, 87, 90, 38, 10, 29, 17, 11, 68, 99, 51, 40, 30, 52, and 71.

**Q.6** Explain continuous and discrete simulation language. **(10)**

**OR**

**Q.6** Explain the principles of verification and validation.