

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

SUMMER - 2019

SUBJET: MODELING AND SIMULATION

Day: Saturday  
Date: 18/05/2019

Time: 11.00 AM TO 02.00 PM  
Max Marks: 60

S-2019-3386

N.B.:

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

**SECTION-I**

Q.1 Discuss continuous and discrete time model. (10)

**OR**

Q.1 Explain stochastic modeling.

Q.2 Explain one of the methods of random generation. (10)

**OR**

Q.2 Evaluate  $\int_0^{10} x^3 dx$  using monte carlo method simulation Take any 20 random numbers between 0 to 1.

Q.3 Explain the concept of binomial distribution. (10)

**OR**

Q.3 A box contains 5 balls. Two one numbered 3, one is numbered 4, and two are numbered 5. The balls are mixed and one is selected at random. After a ball is selected, its number is recorded. Then it is replaced. If the experiment is repeated many times, find variance and standard derivation of the number on the balls.

**SECTION-II**

Q.4 Write a program for trajectory simulation. (10)

**OR**

Q.4 Explain simulation of pure pursuit problem.

Q.5 Derive the relations for EOQ. (10)

**OR**

Q.5 Demand and supply for past 500 days is given bellow:

Supply		Demand	
Available	Number of days	Available	Number of days
10	40	10	50
20	50	20	110
30	190	30	200
40	150	40	100
50	72	50	40

The retailer buys the item a Rs. 20 and sells at Rs 30. The item remains at the end of day is a dead loss. A loss of any unsatisfied demand is Rs. 8/Kg. Use following random numbers alternately 31, 18, 63, 84,15, 79, 07, 32, 43, 75, 81 and 27 to simulate the system for six days sale.

Q.6 Explain GPSS. (10)

**OR**

Q.6 Explain how the simulation is validated.