Q.P. Code :18309

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B: 1. Question No.1 is compulsory.
2. Attempt any THREE questions out of remaining FIVE questions
3. Assume suitable data wherever necessary

Q.1 (a) Define the following terms used in Discrete Event Simulation by giving an example: (i) System (ii) Model (iii) Delay and Clock (iv) System state (v) Activity. **10**

(b) What are various methods used to generate random numbers? State the properties of random numbers. **10**

Q.2 Consider that simulation will begin '' Empty and Idle '' state and it will end at T (6) = 8.6 for the following system. Simulate the problem using Single Server Queuing system. **20**

Arrival Time	0.4	1.6	2.1	3.8	4.0	5.6	5.8	7.2
Departure Time	2.4	3.1	3.3	4.9	8.6			

Q.3 (a) State the distributions which can be sampled using '' Inverse Transform Technique''. Write the procedure for sampling. **10**

(b) Explain verification and validation of simulation models. **10**

Q.4 (a) Explain Kolmogorov- Smirnov test. **10**

(b) How will you simulate manufacturing systems? Explain. **10**

Q.5 A departmental store has two billing counters. The service time follows the exponential distribution with a mean of 6 minutes and customers arrive for service in a Poisson fashion at a rate 20per hour. Compute the steady state parameter. **20**

Q.6 Write short notes on: **20**

a) Exponential distribution

b) Characteristics of queuing system.

c) Simulation software.

d) Terminating and Non-Terminating simulation

e) Input modeling.