MCA/M07
System Simulation
MCA -203

Time : 3 Hours MM:50

Note:- Attempt Five questions in all, selecting One question from each unit.

UNIT-I

1 Compare the following with the help of suitable examples:

(i) Modeling and Simulation
(ii) Static Mathematical Vs. Dynamic Mathematical Models
(iii) Numerical Integration Vs Continuous Simulation
(iv) Stochastic Simulation Vs Monte Carlo Computations 10

2(a) What do you understand by the term System? Give different views of a system. Identify entities, activities and attributes of a Hospital System. 2+3

(b) What do you understand by Systems boundary and environment?

(c) List out the limitations of simulation 3

3(a) Explain how would you generate a random sample from a given non-unifer distribution by using inverse transformation method. 6

(b) Write a program to generate fifty(50) random values between 215 and 450 4

UNIT- II

4 Write a computer program in a high level language to simulate a two server queuing system with a common queue, specified inter-arrival and service patterns and FCFS queue discipline. 10

5(a) Write a program to generate a sequence of twenty(20) possible variates for any specified (depending on the characteristics of the system). 5

(b) Mathematically simulate an inventory system to evaluate and minimum cost when there is constant demand and do not run out of stock. 5

6 Write a simulator in any language to determine the optimal inventory policy (i.e. reader combination of reorder point and reorder quantity which yield maximum service level for a specified average) Choose appropriate boundary conditions of the Inventory System. 10

UNIT-III

7(a) Define Central Limit Theorem. Use the same to find the length of a static simulation system with confidence 99% 5

(b) Explain how would you reduce the effect of serially correspondence data by using Blocking Method in case of Dynamic Storage experiment. 5

8(a) Write a note on Expression-based continuous similar languages and discuss the common characteristics of the languages. 5

(b) List out salient features of
(i) GPSS and
(ii) SIMULA

9(a) Distinguish verification and validation. List out guidelines and validating first time model. 5

(b) Discuss any three tools that re used for reducing the language of the simulation experiment. 5

10 Write short notes on any two of the following.
(i) Simulation of a Hypothetical Computer
(ii) Frequency and Independence Test for Randomness
(iii) Hybrid Simulation