Roll No. ……
Printed Pages : 3

10203

MCA/M- 13
SYSTEM SIMULATION
Paper- MCA- 203

Time allowed : 3 hours] [*Maximum marks : 80*

Note : Attempt five questions in all, selecting at least one question from each unit.
. Question No. 1 is compulsory.

1. **(a) What is a system simulation? Give examples.**
   (b) What are the main advantages of digital simulation.
   (c) Define a system. Explain the terms boundary and environment of a system.
   (d) What is the use of simulation in business?
   (e) What do you understand by pseudo random number?
   (f) What are the elements of inventory theory?
   (g) Discuss regression analysis in simulation?
   (h) What are the limitations of simulation?

UNIT-I

2. **(a) What is modeling and simulation? Discuss various types of models.**
   (b) How system is differentiating with its model? Discuss the characteristics Of system.
3. **(a) When to use the simulation ? Discuss the concept of simulation in science and engineering research. Also discuss the principles and nature of computer modeling and simulation.**
   (b) What is stochastic simulation? Explain with example.

UNIT-II

4. **(a) Differentiate the following:**
(a) Fixed time step and next event model.
(ii) Discuss monte carlo computation.

5. **(a) Describe the multiplicative congruential method to generate the random number. Give the different test for randomness.**
   (b) Write an algorithm to simulate the water reservoir system.

UNIT-III

6. **(a) Derive the expression which gives the probability Pn of having n customers in a queueing system.**
   (b) How to simulate an inventory system by considering following parameters : service level, lead time and average stock held?
7. **(a) Discuss the EOQ with shortage. Explain with diagram.**
   (b) What is adaptive forecasting?
   (c) Draw a flow chart to simulate two-server queue system.

UNIT-IV

8. **(a) How to find the run length of dynamic stochastic simulation? Explain with example.**
   (b) What are the problems with discrete system simulation languages?
   (c) Discuss the concept of validation.
9. **(a) What are the simulation languages? How many types of it? Discuss the continuous system simulation languages in detail.**
   (b) Write a short note on SIMSCRIPT, GPSS AND SIMULA.