M.E. Second Semester (Mechanical Engineering (CAD / CAM)) (F.T.) (CGS)

13494 : Simulation Theory and Applications : 2 MCC 2

P. Pages : 2

Time : Three Hours

* 0 3 3 2 *

AW - 3465

Max. Marks : 80

Notes :
1. Marks as indicated in right side.
2. Answer **three** question from Section A and **three** question from Section B.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Retain the construction lines.
6. Illustrate your answer necessary with the help of neat sketches.
7. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Simulation is a technique of solving problem. Explain with the help of simulation process. **7**

b) What is model? How models are classified in system simulation? **6**

2. a) Explain with suitable examples endogenous activity, exogenous activity, open system & closed system. **7**

b) What is the need of system modeling? Explain. **6**

3. a) Differentiate between use of analog computers and digital computers in simulation. **7**

b) State & explain various elements of a model of a supermarket. **6**

4. a) Describe the numerical computation technique for discrete models. **7**

b) Discuss the Monte Carlo method of solving a problem. Explain it by outlining a procedure to solve a specified problem of your choice for the same. **7**

5. a) Identify entities, attributes and activities in a banking system & in a communication system. **7**

b) Explain the following terms used in system modelling :- **6**
i) State of system,
ii) System,
iii) System Environment.

SECTION – B

6. a) Explain the following blocks with the help of tasks and diagrams in GPSS : **7**
i) GENERATE
ii) QUEUE
iii) TABULATE
iv) ADVANCE
v) SIEZE.

b) Describe the guidelines for testing the validity of models. **6**

7. a) Explain the concept of 'batch means' for establishing confidence intervals for simulation results. 7

b) Explain (i) SIMULA (ii) SIM SCRIPT. 6

8. a) What are causes of simulation Analysis failure? Explain the steps to avoid them. 7

b) Explain 'Time Series Analysis' for making the estimates. 6

9. a) State & Explain 'Autoregressive Process' in detail. 7

b) Consider the following table showing items and customers in a shop. 6

No. of items (xi)	No. of customers (ni)
1	25
2	128
3	47
4	38
5	12

Using discrete probability function, find for each entry.

i) Probability P(xi) of customers buying xi items.

ii) Cumulative Distribution.

10. a) What are various applications of simulation in manufacturing. 7

b) Explain in brief desirable features of simulation software. How they are classified? 7

****