AQ – 2768

Second Semester M. E. (Mech Engg.) (CAD/CAM) Examination

SIMULATION THEORY AND APPLICATION

2 MCC 2

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

Note : (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
(2) All questions carry marks as indicated.
(3) Answer **Three** questions from Section A and **Three** questions from Section B.
(4) Assume suitable data wherever necessary.
(5) Illustrate your answer wherever necessary with the help of neat sketches.
(6) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) What are the steps involved in simulation process ? Explain. 7

    (b) What is the need of system modeling ? Explain. 7

2. (a) What do you mean by endogenous exogenous activities and open and closed system ? Explain with example. 7

    (b) What are various types of system ? Explain with example. 6

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

    (b) Explain the List of functional blocks used in CSMP III. 6

4. (a) Discuss the numerical computation technique for discrete methods. 7

    (b) Disucss the Monte-Carlo method of solving a problem illustrating it by outlining a procedure to solve a specified problem of your choice for the same. 6

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5. (a) Explain the following terms used in system modelling :

(i) State of system.

(ii) System.

(iii) System Environment. 6

(b) State and explain applications of simulation. 7

SECTION B

6. (a) Explain the time series analysis with the help of suitable example. 7

(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) Describe SIMSCRIPT detail. 6

8. (a) Explain 'Time Series Analysis' for making the estimation. 7

(b) Distinguish between General purpose simulation package and application oriented simulation package. 6

9. After studying the monthly receipts and payments over the past 20 months a retailer has developed the following data.

Monthly Receipts (Rs)	Probability	Monthly payments (Rs.)	Probability
30,000	0.20	40,000	0.30
50,000	0.30	60,000	0.40
70,000	0.40	80,000	0.20
1,20,000	0.10	1,00,000	0.10

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using the set of random number given below, simulate

(a) The monthly pattern of receipts and payments for the 12 months of the next year.

(b) Assuming further that the beginning bank balance is Rs.10,000. What is the estimated balance at the end of 12 monthly periods ?

(c) What is the highest monthly balance during the year ?

(d) What is the average monthly balance during the year ?

Random Numbers.

For Receipts : 03, 91, 38, 55, 17, 46, 32, 43, 69, 72, 24, 22

For payments : 91, 96, 30, 32, 03, 88, 48, 28, 88, 18, 71, 99.   14

10. What are the causes of simulation analysis failure ? Explain the steps to avoid them.   13

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