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Jul.-23-0214

CS-606 (Modeling & Simulation)

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D. Section E is compulsory.

SECTION - A

1. Define system, model and simulation, Explain the different steps involved in a simulation study. (10)
2. Differentiate between:
 - (i) Continuous and discrete system. (5)
 - (ii) Deterministic and stochastic activities. (5)

SECTION - B

3. What do you understand by static mathematical model? Explain with example. What are the examples of stochastics and deterministic activities in daily life? (10)
4. Explain Monte Carlo simulation method with an example. Mention some of the application area of Monte Carlo method. (10)

SECTION - C

5. Define queuing system. Explain the Kendall's notation for queuing system. What are the various performance measures in single server queuing System? Explain which of them determine system stability and how? (10)

6. What are the properties of random number? Explain the techniques of generation of random number with appropriate exam. (10)

SECTION - D

7. Define the succession of events. Design a telephone system simulation model using GPSS symbols and explain in brief. (10)
8. Explain Modeling Policies. How one can gather statistics in Discrete Event System Simulation? (10)

SECTION - E (Compulsory)

9. Answer all the questions below:

- (a) What are the advantages of using modelling and simulation for data analysis?
- (b) What's the difference between verification and validation when it comes to modeling and simulation?
- (c) What is the best way to perform sensitivity analysis on a model?
- (d) What kind of input data is required for performing Monte Carlo simulations?
- (e) Define the terms verification, calibration, validation and accreditation of models.
- (f) Differentiate between numerical and analytical methods in system simulation.
- (g) Describe different phases of simulation study with the help of flow chart.
- (h) Explain Priority Queues.
- (i) Discuss Chi-Square Test.
- (j) How to build and apply customer simulations? Explain Briefly. (10×2=20)