Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MEMT - 201

M.E./M.Tech., II Semester

Examination, June 2014

Modeling And Simulation

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What do you mean by system modeling? Write difference between continuous and discrete systems?
   b) Differentiate between
      i) Deterministic and Stochastic activities
      ii) Static Physical Models and Dynamic Physical Models
      iii) Static Mathematical Models and Dynamic Mathematical Models

2. a) What is simulation? List a few advantages and disadvantages of simulation with suitable example.
   b) What are the steps in simulation study? Explain with suitable example.

3. a) Comparison of analytical and simulation methods with suitable example.
   b) Describe the simulation time advance mechanisms with suitable example.

4. Packets arrive at link at an average rate of 20 per second. The average transmission delay of a packet is 0.1 seconds. Assume that service times are exponentially distributed.
   i) What is the transmission rate in packets per second?
   ii) What is the average queuing delay?
   iii) What is the average number of packets in the system?
   iv) What is the probability that the buffer is empty?

5. a) Explain a composite generator for U(0,1) based on Shuffling. What are the relative advantages and disadvantages of the composite generators?
   b) What are the different methods for generation of random number? Describe method of non-uniform random number generation.

6. What is queuing model? How it is useful for Simulation? Explain M/M/1 Queuing Model in detail.

7. a) What is the use of queue in discrete system simulation? Explain with example.
   b) Explain in detail about Queuing theory, types of Queues and simulating queuing systems with respect to event driven models.

8. a) What is the difference between spectral analysis and time series analysis? Explain with suitable example.
   b) Design a Telephone System discrete simulation model using SIMSCRIPT programming language.

******