Code No: D5708

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II - SEMESTER EXAMINATIONS, APRIL/MAY 2012
SYSTEM MODELING AND SIMULATION
(VLSI SYSTEM DESIGN)

Time: 3hours   Max. Marks: 60

Answer any five questions
All questions carry equal marks
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1.   Define system. Explain its properties with appropriate block diagrams.

2.a)   Explain the procedure involved in characterizing the systems.
  b)   Explain the importance of simulation diagrams briefly. Distinguish between across and through signals.

3.a)   Write the Convolution algorithm to generate an m-Erlang variates. Explain the procedure to test whether the generated random variates are from a given distribution or not.
  b)   Consider an ensemble consisting of four equally likely signals defined over the time interval [0,1] as follows:
$$X(t) = \{2t+1, t+2, 3t+2, 4t+1\}$$
       Find the mean.

4.a)   Explain the procedure involved in characterizing the random process.
  b)   Write the algorithm to generate telegraph processes.

5.a)   Distinguish between discrete and distributed delays.
  b)   Consider an automobile system in which a key is used to initiate a starter sequence, followed by the car idling and vehicle moving. Develop a basic Petri net for this sequence.

6.a)   Distinguish between continuous- time Markov chain and discrete time Markov processes.
  b)   Simulate M/M/M/2 queuing model for estimating the average waiting time in the system.

7.   Find $Min\ Z = x^3 - 3x - 5$. Take initial interval as [0, 1.2] and accuracy $\alpha = 10\%$. Solve it by Golden section method.

8.a)   Compare simulation packages with programming languages.
  b)   State and explain the various techniques for increasing the model credibility.

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