Roll No ....

MEDC - 202

M.E./M.Tech. II Semester

Examination, December 2015

Modelling and Simulation of Computer

Time : Three Hours

Maximum Marks : 70

Note : Attempt one question from each unit and all questions carry equal marks.

Unit - I

1. Describe the steps involved in Discrete event system simulation with the help of flow diagram.

OR

2. Describe all the general concept in discrete-event simulation.

Unit - II

3. The lifetime in years, of a satellite placed in orbit is given by the following pdf.

$$f(x)=\begin{cases} 0.4e^{-0.4x} & ;x\geq 0 \\ 0 & ;otherwise \end{cases}$$

a) What is the probability that this satellite is still "alive" after 5 years?

b) What is the probability that the satellite dies between 3 and 6 years from the time it is placed in orbit?

OR

4. The time to failure of a nickel cadmium battery is Weibull distributed with parameters $V = 0$, $\beta = 1/4$ and $\alpha = 1/2$ years.

a) Find the fraction of batteries that are expected to fail prior to 1.5 years.

b) What fraction of batteries are expected to last longer than the mean life?

c) What fraction of batteries are expected to fail between 1.5 and 2.5 years?

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[2]

Unit - III

5. Given the following information for a finite calling population problem with exponentially distributed runtimes and service times: $K = 10$, $1/\mu = 15$, $1/l = 82$, $C = 2$. Compute L_Q and W_Q.

Determine the value of l such that $L_Q = L/2$.

OR

6. Study the effect of pooling servers by comparing performance measures for two M/M/1 Queues, each with arrival rate l and service rate μ, to an M/M/2 queue with arrival rate 2λ and service rate μ for each server.

Unit - IV

7. Given the following edg for a continuous variable with range −3 to 4, develop a generator for variable.

$$F(X)=\begin{cases} 0 & ; x\leq -3 \\ \dfrac{1}{2}+\dfrac{x}{6} & ; -3<x\leq 0 \\ \dfrac{1}{2}+\dfrac{x^2}{32} & ; \theta<x\leq 4 \\ 1 & ; x>4 \end{cases}$$

OR

8. Describe the Inverse Transform Technique in details.

Unit - V

9. Explain the Model Building, verification and validation with the help of flow diagram.

OR

10. What are the types of Simulations with Respect to Output Analysis and explain in details.

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