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15CS834

Eighth Semester B.E. Degree Examination, July/August 2021
System Modeling and Simulation

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions.

1 a. Define Simulation. Write the advantages and disadvantages of simulation. **(08 Marks)**
   b. What is system and system Environment? Explain the components of a system with examples. **(08 Marks)**

2 a. Explain event scheduling algorithm, with example. **(08 Marks)**
   b. Explain the flow diagram the execution of the arrival and departure event. **(08 Marks)**

3 a. Explain the characteristic of queuing system. **(08 Marks)**
   b. Explain uniform distribution and exponential distribution with example. **(08 Marks)**

4 a. Discuss in detail about networks of queue. **(08 Marks)**
   b. Explain Long-run measures of performance of queuing systems. **(08 Marks)**

5 a. Explain the different techniques used for generating random numbers with example. **(08 Marks)**
   b. Use Komogorov Smirnov test to find out whether the random numbers generated are uniformly distributed on the interval [0, 1] can be rejected. Assume $\alpha = 0.05$ and $D_\alpha = 0.565$ and the random numbers are 0.54, 0.73, 0.98, 0.11, 0.68. **(08 Marks)**

6 a. Explain acceptance rejection technique with example. **(08 Marks)**
   b. Generate 3 poisson variable with mean 0.2 consider random numbers 0.4357, 0.4146, 0.8353, 0.9952, 0.8004. **(08 Marks)**

7 a. List the steps involved in the development of a useful model of input data. **(08 Marks)**
   b. Explain four methods of selecting input models without data. **(08 Marks)**

8 a. Discuss Quantite-Quantile plots with example. **(08 Marks)**
   b. Explain Chi-square goodness of fit test for exponential distribution with example. **(08 Marks)**

9 a. Explain with a neat diagram model building, verification and validation process. **(08 Marks)**
   b. Explain calibration and validation model with neat diagram. **(08 Marks)**

10 a. Discuss output analysis for terminating simulation in detail. **(08 Marks)**
   b. Explain optimization versus simulates. **(08 Marks)**

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