Exam. Code: 0918
Sub. Code: 33456

2055

B.E. (Computer Science and Engineering)

Sixth Semester

CS-603: Modeling and Simulation

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Answer the following:-

a) Briefly explain the difference between continuous and discrete system.

b) Deterministic and Stochastic simulation models.

c) Briefly list various components of single server queuing system.

d) Justify the statement that chi-square test uniformity test of random nos. is only a necessary test for randomness but not sufficient one.

e) What is the significance of strongly connected event graph in event initialization rule?

f) Briefly explain the stores and facilities in GPSS.

g) Explain the term pseudorandom nos.

h) Give the names of simulation packages having both discrete and continuous simulation capabilities.

i) Write a program to find the average of any given 10nos.using for statement in Matlab.

j) Briefly explain how logical arrays can serve as a mask for arithmetic operation in MATLAB. (10×1)

UNIT - I

II. a) Define the term Simulation. Explain the advantages and limitations of simulation techniques.

b) Explain the various components and organization of discrete event simulation. (5,5)

III. a) Draw and explain the flowchart for arrival and departure routine.

b) Explain the event graph for inventory model. (5,5)

P.T.O.

IV. A factory has a large no. semiautomatic machines. On 50% of the working days none of the machine fail. On 30% of the days one machine fails and on 20% of the days two machines fail. The maintenance staff on the average puts 65% of the machines in order in one day, 30% in two days and the remaining 5% in three days. Simulate the system for 30days generation and estimate the average length of queue, average waiting time, the server loading time i.e. the fraction of the time for which server is busy. (10)

UNIT - II

V. a) What are the qualities of an efficient random no. generator? Use the mixed congruential method to generate the sequence of ten two digit nos. such r(n+1)=21r(n)+53 mod 100 take r0=52.

b) In a random sample of ten bags each bag has 100 pieces of candy and five flavors (Apple, line, cherry, orange, grape) the observed frequencies are 180,250,120,225,225 respectively. The chi square value with @=0.05 and 4degrees of freedom is 9.488. Is the proportion of flavor of candies are equal. (5,5)

VI. a) Write a program in MATLAB for generating the random variates for the poisson distribution.

b) Explain different control statements of GPSS with example. (5,5)

VII. a) Explain features and usage of any network simulator.

b) What is vectorization in MATLAB? Explain it's benefits with example. (5,5)

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