## 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. I which is compulsory and selecting two questions from each Part.

x-x-x

identified by you.  3Q. a) Explain different advantages and disadvantages of Simulation.  3Q. b) Explain Components and organization of a Discrete Event Simulation Model in detail.  4Q a) Explain different steps in sound simulation study.  4Q. b) Explain Numerical Integration by Monte Carlo Simulation with example.  5Q. a) Generate sequence of ten random numbers by Multiplicative Congruency using seed as 60 constant multiplier as 13 and modulo as 100.  5Q. b) Explain SIM mode of Transfer Block in GPSS with example.	Q: considered to exactly the last AR?	(1)
columns of data with different data types in Martine (1)  iii) List different Control statements of GPSS.  iii) What is event elimination rule?  v) What are exogenous activities?  iii) Give the names of three basic components of queuing systems.  vi) Give the names of three basic components of queuing systems.  vii) Give the names of three basic components of queuing systems.  viii) What is purpose of Event list and Event routine in next event time advance approach?  viii) What is purpose of Event list and Event routine in next event time advance approach?  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  vi) Briefly explain the difference between Analytical Solution and Simulation.  x) Briefly explain different limitations of JIT Compiler in MATLAB.  (1)  Part-A  2Q. A server facility consists of two servers in series, each with its own FIFO queue. A customer completing service at server 1 proceeds to server 2, while a customer completing service at server 2 leaves the facility. Assume that the inter-arrival times of customers to server 1 are IID exponential random variables with mean 0.7 minute, and service times of customers at server 1 are IID exponential random variables with mean 0.7 minute, and service times of customers at server 2 are IID exponential random variables with mean 0.9 minute. Assume that there is travel time from the exit from server 1 to the arrival to queue 2 (or to server 2). Assume this travel time is distributed uniformly between 0 and 2 minutes. Run to queue 2 (or to server 2). Assume this travel time is distributed uniformly between 0 and 2 minutes. Run to queue 2 (or to server 2). Assume this travel time is distributed uniformly between 0 and 2 minutes. Run to queue 2 (or to server 2). Assume this travel time is distributed uniformly between 0 and 2 minutes. But to queue 2 (or to server 2). Assume this travel time is distributed uniformly between 0 and 2 minutes. But the simulation for exactly 1000 minutes and estimate for each server	What is vectorization in MATLAB:	0
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iv) What is event elimination rule?  v) What are exogenous activities?  vi) Give the names of three basic components of queuing systems.  vii) Generate five pseudo-random numbers using Mid square method with 1120 as seed number.  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event routine in next event time advance approach?  (1)  viii) What is purpose of Event list and Event Purpose and Event 2.  Part-A  (2)  A server facility consists of two servers in series, each with its own FIFO queue. A customer completing service at server 2 are IID exponential random variables with mean 1 minute. Service times of customers at server 1 are IID exponential random variables with mean 1 minute. Service times of customers at server 1 are IID exponential random variables with mean 0.7 minute, and service times of customers at server 1 are IID exponential random variables with mean 0.7 minute, and service times of customers at server 1 are IID exponential random variables with mean 0.7 minute, and service times of customers at server 2 are IID exponential random variables with mea	columns of data with different data types in the transfer of GPSS	
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6Q.b) Write a MATLAB Program for generation of random variates following Poisson distribution.	Draw and explain event graph of above system Also develop now chart diagrams of identified by you.  3Q. a) Explain different advantages and disadvantages of Simulation.  3Q. b) Explain Components and organization of a Discrete Event Simulation Model in detail.  4Q a) Explain different steps in sound simulation study.  4Q. b) Explain Numerical Integration by Monte Carlo Simulation with example.  Part-B  5Q. a) Generate sequence of ten random numbers by Multiplicative Congruency using seconstant multiplier as 13 and modulo as 100.  5Q. b) Explain SIM mode of Transfer Block in GPSS with example.	(5) (5) (5) (6) (5) (6) (5) (5)

118. Does the experiment result support the theory that there is no difference between experimental values and theoretical values? (The table value of Chi-Square for 3 degree of freedom at 5% level of

7Q. b) Write a MATLAB program to solve roots of a quadratic equation Ax2+BX+C=0 where A, B and

C are coefficients and input by user.