

TCS-506

1157

Odd Semester Examination 2017-18

B.TECH (SEMESTER-V)

MODELING AND SIMULATION

Time: 03:00 Hours

Max Marks: 50

Note: Attempt all questions:

- (1) Attempt **any four**. All questions carry **equal** marks: [3×4]
- (a) Explain the acceptance –rejection technique
 - (b) What is a system and explain different models of viewing system.
 - (c) Difference between system modeling and system simulation with example.
 - (d) Give a layout for simulation of University Examination system.
 - (e) Write down the advantages and disadvantages of simulation.
- (2) Attempt **any four**. All questions carry **equal** marks: [3×4]
- (a) Discuss the analytical results for M/M/1, M/M/1/N, M/M/c and M/G/1 Queuing models.
 - (b) Explain M/M/1 queuing model. With its performance parameters.
 - (c) What do you understand by queuing system? Define different behaviors of a customer standing in a queue.
 - (d) Mention various features needed in programming discrete event simulation models. Give a detailed comparison of simulation packages with programming languages.
 - (e) Explain numerical computation techniques for continuous & discrete models.
- (3) Attempt **any four**. All questions carry **equal** marks: [6×2]
- (a) What do you mean by random numbers? What is the role of random numbers in simulation?

- (b) What is method of testing random number generation of non uniformly distributed random numbers?
 - (c) Explain uniformly and independent testing.
 - (d) How we can generate variates using Inverse Transformation technique for exponential distribution.
 - (e) Define the corporate model of a system.
- (4) Attempt **any two**. All questions carry **equal** marks: [7×2]
- (a) The sequence of numbers 0.54, 0.73, 0.98, 0.11 and 0.68 has been generated. Use the kolomogorov-smirnov test with $\alpha=0.05$ to determine if the hypothesis that the numbers are uniformly distributed on the interval $[0, 1]$ can be rejected.
 - (b) Explain Chi-square goodness-of-fit test for exponential distribution, with an example.
 - (c) Explain the linearity congruential method. Using the linear congruential method, generate a sequence of random numbers with $x_0=27$, $a=17$, $c=43$ and $m=100$.
