

TCS-506

1107

Odd Semester Examination 2018-19

B.TECH. (CSE) (Semester-III)

Modeling and Simulation

Time: 03:00 Hours

Max. Marks :50

1. Explain any four questions of the following:

[4×2.5=10]

- (a) What is the requirement of the modeling and simulation? Explain.
- (b) Explain static and dynamic physical model.
- (c) Explain the advantages and disadvantages and pitfalls of simulation.
- (d) What is the difference between agent based simulation and micro simulation?
- (e) Monte Carlo Simulation as a special case of stochastic simulation? Comment.

2. Explain any four questions of the following:

[4×2.5=10]

- (a) Explain the different types of system simulation.
- (b) Briefly explain Cobweb model.
- (c) Explain different types of simulation tools.
- (d) Discuss any five blocks in GPSS.
- (e) Explain Chi-square goodness of fit test. Apply it to Poisson assumption with  $\alpha = 3.64$ . Data size= 100 and observed frequency  $O_i = 12, 10, 19, 17, 10, 8, 7, 5, 5, 3, 3, 1$ .

3. Explain any two questions of the following:

[2×7.5=15]

- (a) Explain multi-segment models with diagram.

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(b) Briefly explain stochastic simulation.

(c) Explain the linearity congruential method. Using the linear congruential method, generated a sequence of random numbers with  $x_0 = 27$ ,  $a=17$ ,  $c= 43$  and  $m=100$ .

4. Explain any two questions of the following: [2×7.5=15]

(a) Describe analog method for continuous simulation.

(b) How to describe the simulation in terms of representation of time.

(c) Discuss Little's theorem. Discuss the analytical results for M/M/1, M/M/1/N, M/M/C, and M/G/1 Queuing Models.

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