Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(CSE) (2012 to 2017) (Sem.–6)

SIMULATION AND MODELING

Subject Code : BTCS-601

M.Code : 71107

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.**

SECTION-A

Answer briefly :

1) State two major advantages of simulation.

2) What are the major properties of the random numbers?

3) Mention the attributes of Discrete as well as Continuous system.

4) Differentiate process orientation and event orienation.

5) What is meant by biased and unbiased estimator? Give example.

6) Write the Little's formula and relationship between L, W, Lq and Wq.

7) Give the properties of Pseudo-Random numbers.

8) Elaborate the terms 'activity' and 'attribute' with respect to system simulation.

9) What is meant by poker test? Give example.

10) List any two simulation software.

SECTION-B

11) Take an appropriate example and discuss the concept of event scheduling and time-advance mechanism in discrete event simulation.

12) Describe the inverse transformation technique for Triangular and Weibull Distribution with respect to random variate generation.

13) Mention the objectives of a priority discipline queuing model further and differentiate the preemptive and non-preemptive priority discipline queuing model with example.

14) Elaborate, in detail, any one acceptance-rejection technique for stationary and non-stationary Poisson distribution.

15) What is test of significance and why is it important? Discuss the concept Chi-Square and Chi- Square with equal probabilities.

SECTION-C

16) When is it appropriate to use network queues? Briefly discuss the steady state behavior of infinite (M/M/c/infinity) and finite (M/M/c/K/K) calling population models.

17) Explain the role of exponential distribution and properties in statistical modeling. Also, present a detailed discussion on queuing models involving hyperexponential distributions.

18) Describe the following with respect to comparison and evaluation of alternate system designs :

    a. Sampling with equal and unequal variance

    b. Multiple Linear Regression

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.