

Total No. of Pages : 02

Total No. of Questions : 09

BTech.(IT) (2011 Onwards E-III) (Sem.-7,8)

MODELLING AND SIMULATION

Subject Code :BTIT-905

Paper ID : [A3057]

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

1. **Write briefly :**
 - a. Define continuous Random Variable.
 - b. Mean and variance of uniform distribution.
 - c. Probability mass function.
 - d. Advantages of pseudo random numbers.
 - e. Dynamic mathematical model.
 - f. Define “*Memoryless*” property of exponential distribution.
 - g. List two properties of Poisson process.
 - h. Differentiate between analytical solution and numerical simulation.
 - i. Draw the graph for exponential probability density function.
 - j. Differentiate between uniform and non-uniform random numbers.

SECTION-B

2. Define Non Stationary Poisson Process (NSPP) and how it is different from Stationary Poisson Process.
3. What do you mean by time advance mechanisms in simulation? Discuss Discrete- event time advance approach with flowchart.
4. Discuss the various applications areas of simulation.
5. What is poker test? Explain with suitable example.
6. Discuss pros and cons of network simulator.

SECTION-C

7. Describe discrete event simulation model with its development process.
8. Write an algorithm to generate non-uniformly distributed random numbers from the given binomial distribution.
9. Explain the following :
 - a. Chi-Square test.
 - b. Monte Carlo Simulation.