Roll No.

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.