(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2147 Roll No. | | | | | | | | | | |

M.C.A.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2010-11

SIMULATION & MODELLING

Time : 3 Hours *Total Marks : 100*

Note : (1) All questions carry equal marks.

(2) Attempt **all** questions.

1. Attempt any **two** parts of the following : **(10×2=20)**

   (a) What do you mean by modeling and also discuss its utility.

   (b) Why we need Random Numbers in simulation experiments and what are the important properties of Random Numbers ?

   (c) Name four principal entities, attributes and activities to be considered for the simulation of the following system :

   (i) University Registration System

   (ii) Examination System

   (iii) Railway Reservation System.

2. Attempt any **two** parts of the following : **(10×2=20)**

   (a) Explain the distributed Lag Model and also describe the importance of Lagged variables.

   (b) Explain the concept of System Design, System Analysis and System Postulation.

   (c) Discuss the Simulation of "Pure-Pursuit" problem with appropriate diagram.

3. Attempt any **two** parts of the following : **(10×2=20)**

   (a) Discuss the role of Frequency test to test the randomness of random numbers with the help of an example.

   (b) Explain the simulation of Water-Reservoir with proper diagram and algorithm.

   (c) Describe the role of Monte-Carlo technique in simulation with proper example.

4. Attempt any **two** parts : **(10×2=20)**

   (a) How the Logistic Curve is related to Exponential Growth Model as well as Modified Exponential Growth Model ?

   (b) What do you understand by System Dynamics ? Also differentiate between Exponential Growth Model and Exponential Decay Model.

   (c) Discuss the various components used in System Dynamics diagrams in detail.

5. Attempt any **two** parts : **(10×2=20)**

   (a) Compare between Continuous Simulation languages and Discrete Simulation languages.

   (b) What do you mean by Forward and Backward pass and also discuss the steps to identify the critical path in an Activity Network.

   (c) Write short notes on any **three** :

      (i) Simulation of Auto-pilot

      (ii) MODSIM-III

      (iii) CSMP-III

      (iv) Object-oriented Simulation.