Printed Pages: 4 **NIT-062**

(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 113662	**Roll No.**

B.TECH.

Theory Examination (Semester-VI) 2015-16

SIMULATION AND MODELING

Time : 3 Hours ***Max. Marks : 100***

Section-A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10 = 20)

(a) What is the difference between static and dynamic model?

(b) Why Validation is so important in Modelling and Simulation?

(c) Discuss about point estimation and interval estimation.

(d) Monte Carlo simulation is a special case of stochastic simulation. Comment.

(e) How to Build and Apply Computer Simulations? Explain in brief.

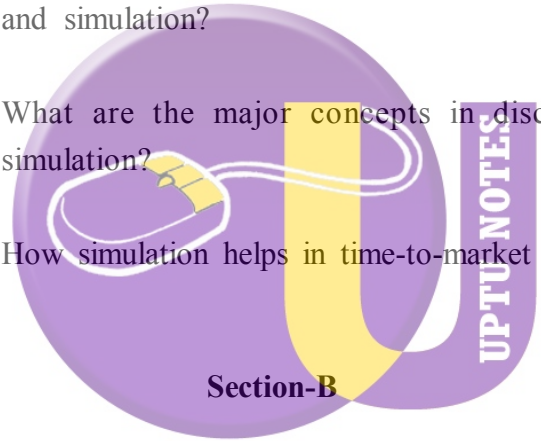
(f) What is meant by the "System State" in a simulation?

(g) What do you understand by the term face Validity of a conceptual model?

(h) What is the difference between analytical methods and simulation?

(i) What are the major concepts in discrete-event simulation?

(j) How simulation helps in time-to-market industry?



Section-B

2. Attempt any five questions from this section. (10×5 = 50)

(a) Compare and contrast the modelling process with the software life cycle: Analysis. design, implementation, testing, documentation, and maintenance.

(b) Define the system. How will you relate and distinguish the continuous and discrete systems? Explain with suitable example.

(c) How Neural Network is applied in Modelling and Simulation of a complex system.

(c) What is HTTP? Explain about operation of HTTP.

(d) Discuss fundamental concepts of continuous system simulation language CSMP III. Write CSMPIII program for aircraft with rate control.

(e) Describe the different categories of discrete-system simulation languages.

(f) Explain the chi-square goodness of fit test to acept or reject a candidate distribution.

(g) Explain the characteristics of queuing system. List different queuing notations. Explain any two long run measures of performance of queuing system.

(h) Draw the structure of a system dynamic model. Explain the system dynamic diagram of market model.

Section-C

Attempt any two questions from this section.

(15×2 = 30)

3. Two competing companies invest funds in capital equipment to improve their positions. The rate at which each invests funds decreases linearly as their own investment increases but increases linearly as their competitor's investment increases. Draw a diagram from which to simulate the competition and determine under what conditions the investments will stabilize.

4. Differentiate between verification and validation of simulation models. Briefly explain 3-step approach that aids in the validation process. Explain output analysis for terminating simulation.

5. Name the four principal entities, attributes and activity to be considered for the simulation of the following systems:

   i) A gasoline filling station

   ii) A cafeteria

   iii) University registration system.