Printed Pages: 3 **NMT-011**

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

B.TECH.

Theory Examination (Semester-VI) 2015-16

SIMULATION & MODELING

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

Section-A

1. Attempt all the questions (10×2 = 20)

(a) What do you mean by attribute & state of the system?

(b) Give four advantages of simulation.

(c) Distinguish between static & dynamic models.

(d) What do you mean by system modeling?

(e) Define the term black box.

(f) What is the difference in between close & open system?

(g) Differentiate between analog & hybrid simulation.

(h) Define feedback system.

(i) What is the need of system modeling?

(j) Differentiate between linear & non linear systems.

Section-B

2. Attempt Any FIVE Questions : (5×10=50)

(a) If a discrete random variable 'X' takes the values 1,2,3,4 with respective probabilities $\frac{1}{6}, \frac{1}{3}, \frac{1}{3}, \frac{1}{6}$ then calculate mean and variance.

(b) Explain the generation of random numbers with the help of computer.

(c) What are the objectives of simulation in manufacturing? Give reasons for simulation applied to manufacturing systems.

(d) Define Discrete & Continuous Probability Functions with Examples.

(e) Name three of the entities and activities to be considered if you were to simulate the operation of (i) Supermarket, (ii) Bank and (iii) Traffic (iv)Factory system

(f) State the guiding principles for building the mathematical model of any system.

(g) Write short note on Simulation of system dynamics model.

(h) Explain validation of experimental model with suitable example.

Section-C

Attempt any two of the following. (2×15 = 30)

3. Distinguish between (i) Physical Model and Mathematical Model, (ii) Analytical Model and Numerical Model and (iii) Continuous and Discrete Model.

4. Explain Monte Carlo technique of simulation. Calculate the value of ? using Monte Carlo simulation.

5. What is the role of computers in simulation studies? Briefly describe different simulation software packages.