

Roll No. ....

Subject Code—6819

**M.C.A. (Fifth Year) EXAMINATION**

(5 Years Integrated Course)

(Main/Re-appear)

MCA-504

**SYSTEM SIMULATION AND MODELLING**

*Time : 3 Hours*

*Maximum Marks : 100*

**Note :** Attempt any *Five* questions. All questions carry equal marks.

1. What do you mean by Model ? Discuss various types of model. Also discuss the principle used in modeling.
2. Discuss and differentiate the model verification and model validation. Discuss the validation of existing model and first time model.

3. Differentiate the following :

- (a) Continuous and discrete system
- (b) Model data and real system data
- (c) Differential and partial differential equation models
- (d) Fixed time step model and event-to-event model.

4. What is meant by system simulation ? Discuss the steps used in simulating a system. Discuss the simulation of inventory control system.

5. Why is it not possible to use the physical random generator for generation of random number ? Give an example stating the use of random number. Also discuss various tests for testing the randomness with the help of examples.

6. What do you understand by time sharing computer system ? Discuss the simulation of time sharing computer system.

7. Draw the diagram showing the classification of simulation languages. What are advantages and disadvantages of using simulation languages vis-à-vis using general purpose computer languages for simulation experiments ? Also, describe the factors affecting the selection of a discrete system simulation language.

8. Discuss the following :

- (a) Use of database in modeling and simulation.
- (b) Method for generation of pseudo-random number.