Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (IT) (Sem.–7)

MODELLING AND SIMULATION

Subject Code : IT-416

Paper ID : [A0534]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS 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

Q1. Answer briefly :

a) What are various advantages of simulation?

b) What do you mean by system analysis and design?

c) What do you understand by the term "Modeling process"?

d) What do you mean by hybrid systems?

e) Define the terms "activity" and "state of a system".

f) Differentiate between simulation time and time taken to carry out computations.

g) Give any four examples where simulation is advantageous.

h) What do you mean by a discrete event?

i) Explain real time simulation.

j) Write any four points that relates databases and simulation.

SECTION-B

Q2. Discuss various types of systems with the help of appropriate examples. Can a system be intrinsically continuous but information about them is only available at discrete interval of times? If yes, explain.

Q3. Explain verification and validation modeling procedures with the help of appropriate examples.

Q4. Draw a block diagram for simulation of a time sharing computer system; also describe in brief major components of desired system.

Q5. Discuss the use of Artificial Intelligence (AI) in area of modeling and simulation with the help of appropriate examples.

Q6. Discuss various reasons for choosing GPSS and SIMSCRIPT as most widely used simulation languages.

SECTION-C

Q7. What do you mean by continuous system simulation? Differentiate between differential and partial differential equation models with the help of any example.

Q8. Suppose that it has been decided to make a study via a simulation model. Discuss whether the simulation should be static or dynamic, deterministic or stochastic, and continuous or discrete for the following systems :

a) A major section of an existing factory.

b) An freeway interchange that has experienced severe congestion.

c) The shuttle-bus operation for a rental car agency at an airport.

d) A battlefield communication network.

Q9. What are simulation languages and their usage? Discuss various features of any simulation language you have studied with the help of suitable code fragments.