

**B. Tech 5th Semester Examination**

**Modeling and Simulation (NS)**

**CS-312**

**Time : 3 Hours**

**Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Candidates are required to attempt five question in all selecting one question from each sections, question no. 1 is compulsory. All question carry equal marks.

**SECTION - A**

1. Explain the following:

- (a) Real time simulation.
- (b) Steps in simulation study.
- (c) Simulation in education.
- (d) Transient state of the system.
- (e) Queuing arrival service model.
- (f) Time dependent queues.
- (g) Merits of GPSS.
- (h) SIM SCRIPT.
- (i) Simulation in medical.
- (j) Binomial distribution function.

(2×10=20)

**SECTION - B**

2. Explain the following in detail:

- (a) Advantages and limitation of simulation technique. (10)
- (b) Cobweb Models and Monto carlo simulation (10)

- 3. (a) Define System. Explain the components of a system with an example. (10)
- (b) What is simulation? List any five circumstance, when the simulation is the appropriate tool and when it is not. (10)

**SECTION - C**

- 4. What do you mean by random number generation? Explain discrete random variable and continuous random variables, with examples. (20)
- 5. Explain the following in detail:
  - (a) Density and distributive functions. (10)
  - (b) Discrete and continuous simulation procedures. (10)

**SECTION - D**

- 6. (a) What do you mean by Queuing system? Explain rudiments of queuing theory. Explain the characteristics of a queuing system in detail. Also explain the components of waiting line system in detail. (10)
- (b) Explain the concept of Simulation of PERT in detail. (10)
- 7. Explain the following in detail:
  - (a) Simulation of single-server queue, two server, two server in parallel queuing system. (10)
  - (b) Simulation of inventory system. (10)

**SECTION - E**

- 8. (a) What do you mean by GPSS? Explain the GPSS block diagram in detail. Also explain the characteristics of Block in detail. (10)
- (b) Describe the three step approach which has been used as an aid in the validation process. (10)
- 9. (a) What do you mean by simulation language? Explain the merits of simulation language in detail. (10)
- (b) Differentiate between verification and validation of a simulation model. With a neat diagram, explain the relation between model building, verification and validation. (10)