

IV B.Tech I Semester Supplementary Examinations, November 2005
SIMULATION & MODELLING
(Common to Computer Science & Systems Engineering and Electronics & Computer Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Briefly explain the various principles used in modeling.
(b) Consider an automobile wheel suspension system with the body to have a mass of M_1 and assume that its motion is determined by the force of gravity and the reaction with the suspension system. Construct a simulation model for the motions of the wheel and body. [8+8]
2. (a) Discuss with an example how simulation is done for a continuous model.
(b) Discuss with an example how simulation is done for a discrete model. [8+8]
3. (a) Explain about analog computers and analog methods used in simulation.
(b) Discuss about hybrid computers and digital-analog simulators. [8+8]
4. (a) Explain the Monte-Carlo method.
(b) Discuss some of the applications of Monte-Carlo method.
(c) Is Monte-Carlo method a simulation technique ? Justify your answer [8+4+4]
5. Arrivals of processes at a server are poisson distributed at the rate of 2 processes per second.
(a) What is the probability of zero process arrivals in the next minute?
(b) What is the probability of one process arrivals in the next two minutes? [8+8]
6. (a) Illustrate the general flow of control during the execution of simulation program with suitable diagram and explain it.
(b) Discuss the following:
 - i. Counters
 - ii. Utility
 - iii. Occupancy[8+8]
7. Draw GPSS block diagrams and write programs for the following problem. People arrive at the rate of one every 10 ± 5 minutes to use a single telephone. If the telephone is busy, 50% of the people come back 5 minutes later to try again. The rest give up. Assuming a call takes 6 ± 3 minutes, count how many people will have given up by the time 1,000 calls have been completed. [16]

8. (a) Explain LIST processing in SIMSCRIPT.
(b) Explain Data Structures in SIMSCRIPT and GPSS. [8+8]
