

INDUSTRIAL ENGINEERING  
SEVENTH SEMESTER  
**IE472 – SYSTEM SIMULATION**  
(REGULATIONS 2004)

(27)

Time: 3 hr

Max Mark : 100

Answer ALL questionsPart – A (10 X 2 = 20 Marks)

1. What are Entities and MOP?
2. What are the advantages of simulation?
3. Define Inter-arrival time and clock times
4. What are the properties of poisson distribution?
5. What are (A, t) and (D, t) in single channel queue?
6. How will you calculate Response time in simulation experiment?
7. What is the need for simulation languages?
8. What is the purpose of ADVANCE and GENERATE Block in GPSS?
9. Show the graph of continuous functions used in GPSS?
10. What are the uses of Transfer Modes in GPSS?

Part – B ( 5 X 16 = 80 Marks)

11. Describe the steps used in conducting the Design of simulation experiments?

12. (a) Explain the various methods of generating random numbers with suitable illustrations?

OR

12. (b) How will you conduct the testing of Random variates? Describe the Monte Carlo simulation experiment with a suitable example?

13. (a) Consider the following continuously operating job shop. Interarrival times of jobs are distributed as follows:

Time between Arrivals ( Hours)	Probability
0	0.23
1	0.37
2	0.28
3	0.12

Processing times for jobs are normally distributed with Mean 50 minutes and standard deviation of 8 minutes. Construct a simulation table, and perform a simulation for 10 new customers. Assume that when the simulation begins there is one job being processed (scheduled to be completed in 25 minutes) and there is one job with a 50 minute processing time in the queue.

OR

13. (b) Lead time for a stock item is normally distributed with a mean of 7 days and a standard deviation of 2 days. Daily demand is distributed as follows:

Daily Demand	0	1	2	3	4
Probability	0.367	0.368	0.184	0.062	0.019

Determine the lead-time demand for 20 order cycles.

14. (a) Describe the various types of models with suitable examples?

OR

14. (b) Explain the Random variates for standard distributions like uniform, exponential and binomial in detail?

15. (a) Write a logical flow-chart and programming language for the case: single server single channel queuing model using GPSS.

OR

15. (b) Write a logical flow-chart and programming language for the case: multiple server multiple channel queuing model using GPSS.