

Con. 3453-09.

B.E. (J.T.) Sem VII (R)

VR-4762

Computer Simulation & Modelling
(3 Hours)

[Total Marks : 100

26-05-09

11 am to 2 pm.

C16

- N.B. : (1) Question No. 1 is **compulsory**.
(2) Solve any **four** questions out of remaining **six** questions.

1. (a) Define Simulation. When is simulation appropriate and when it is not ? 10
(b) Perform the simulation of the inventory system. Daily demand is represented by the random numbers 4, 1, 8, 5, 2 and the demand probability is given by 10

Demand	Probability
0	0.2
1	0.5
2	0.3

If the initial inventory is 4 units, determine on which day the shortage condition occurs.

2. (a) Describe the Event scheduling time Advance algorithm. 10
(b) How would you select a simulation software ? Mention the features of any one simulation software. 10
3. (a) Name and explain some of the useful statistical models for queueing system. 10
(b) Describe the characteristics of queueing systems. 10
4. (a) State the properties of random numbers. What are the methods used to generate random numbers ? 10
(b) Test the following random numbers for independence by runs up and down test. 10
Take $\alpha = 0.05$ and critical value $Z_{0.025} = 1.96$
{ 0.12, 0.01, 0.23, 0.28, 0.89, 0.31, 0.64, 0.28, 0.33, 0.93 }.
5. (a) Describe the procedure to generate samples from :— 10
(i) Ertang distribution
(ii) Binomial distribution
Using convolution method.
(b) Describe the steps involved in the development of a model of input data. 10
6. (a) Which tests are used to test "Goodness of fit". Describe any one of them. 10
(b) What do you understand by model verification and validation ? Describe briefly the various methods of validating input model. 10
7. (a) Give examples of terminating and non-terminating simulation. Estimate confidence interval. 10
(b) When will you use AR(1) and EAR(i) model ? What do you understand by Co-variance and Correlation. 10