B.TECH
(SEM IV) THEORY EXAMINATION 2017-18
SIMULATION AND MODELING

Time: 3 Hours   *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   **Attempt *all* questions in brief.**   **2 x 10 = 20**

   a.   Define system environment.
   b.   Write the component of system with example?
   c.   What is system modeling?
   d.   Compare Analytical & simulation model?
   e.   What are the properties of C.D.F.?
   f.   What do you mean by parameter estimation?
   g.   Define Service utilization.
   h.   What are arrival Patterns?
   i.   What do you mean by reliability estimation?
   j.   Describe the areas of application of simulation?

SECTION B

2.   **Attempt any *three* of the following:**   **10 x 3 = 30**

   a. Write three Principal entities, attributes and activities to be considered for the simulation of the following system

   (a) A University Library   (b) Railway reservation system

   (c) A hospital emergency room   (d) A fast food restaurant

   b. What is the model? What are the types of system model and what is the difference between static and dynamic model? Give example?

   c. Explain Cobweb Models. Draw suitable diagram.

   d. Describe the cost in queuing problems. Define server utilization and system performance.

   e. Explain any two parts the following

   (i) Capital recovery model

   (ii) Inventory system model

   (iii) Interpretation of confidence interval of a parameter

SECTION C

3.   **Attempt any *one* part of the following:**   **10 x 1 = 10**

   (a)   What is the Simulation? What are the need, advantage and disadvantage of simulation and modeling?

   (b)   Write principle and steps in creating system models.

4.   **Attempt any *one* part of the following:**   **10 x 1 = 10**

   (a)   Write a short notes of multivariate and time series input model

(b) What do you mean by event and data modeling?

5. **Attempt any *one* part of the following:**   **10 x 1 = 10**

(a) What are GOODNESS -OF-FIT tests? The following table shows the distribution of digits in numbers chosen at random from a telephone directory:

Digits:	0	1	2	3	4	5	6	7	8	9
Frequency:	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

(χ^2 *at 5% level of significance for* 9 *d.f. is* 16.919.)

(b) What do you mean by Numerical Computation techniques for continuous and discrete model?

6. **Attempt any *one* part of the following:**   **10 x 1 = 10**

(a) What do you mean by Gathering statistic, Measuring Occupancy and utilization?

(b) What do you mean by service delay and transit times estimator?

7. **Attempt any *one* part of the following:**   **10 x 1 = 10**

(a) Explain Pi value estimation.

(b) Explain transfer line model in detail.