

L1B
5/11/15 FN

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : 95316

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Software Engineering

ESE 072 — MODELLING AND SIMULATION

(Regulations 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate discrete system Vs continuous system.
2. Define Simulation.
3. What are the types of continuous distributions?
4. What is Monte-Carlo Simulation? Give one example of its application.
5. List some of the errors occurring in random numbers.
6. What is Poker test in Simulation?
7. How does C++ structure help Simulation?
8. List out the simulation languages.
9. What is data collection for Simulation?
10. Distinguish verification process and validation process.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the components of a system with examples. (10)
(ii) Discuss the advantages and disadvantages of simulation. (6)
Or
(b) (i) Give the classification of the various types of models and explain with examples. (8)
(ii) Explain about simulation in inventory system. (8)

12. (a) (i) Explain the characteristics of a queuing system. List the different queuing notations. (10)
(ii) What is Poisson process? Mention the properties of Poisson process. (6)

Or

- (b) (i) Explain any two discrete distributions. (8)
(ii) Write a short note on empirical distributions. (8)
13. (a) (i) The sequence of numbers 0.54, 0.73, 0.98, 0.11 and 0.68 has been generated. Use the Kolmogorov-Smirnov test with $\alpha = 0.05$ to determine if the hypothesis that the numbers are uniformly distributed on the interval $[0, 1]$ can be rejected. Compare $F(X)$ and $S_N(X)$ on a graph. (10)
(ii) Suggest a step by step procedure to generate random variates using Inverse transform technique for exponential distribution. (6)

Or

- (b) Explain in detail the various techniques used to generate random numbers with examples. (16)
14. (a) (i) Explain about the simulation using OOP. (12)
(ii) Compare GPSS with Arena. (4)

Or

- (b) With an example, explain the use of GPSS in simulation. (16)
15. (a) (i) Discuss about the output analysis for a single system. (10)
(ii) Explain Chi-square goodness-of-fit test for exponential distribution, with an example. (6)

Or

- (b) (i) Explain, with a neat diagram, model building, verification and validation. (10)
(ii) Write a short note on multivariate input model. (6)