

FACULTY OF ENGINEERING

B.E. 4/4 (CSE) I Semester (New) (Suppl.) Examination, July 2010

Subject: Simulation and Modeling (Elective – I)

Time: 3 Hours

Max. Marks : 75

Note: Answer all questions from Part A. Answer any Five questions from Part B.

PART – A (25 Marks)

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|---|---|
| 1. Define the concept of 'Simulation' in detail. | 2 |
| 2. What are the advantages of 'Simulation'? | 3 |
| 3. Discuss about 'Discrete Random Variable'. Give an example. | 3 |
| 4. What is 'Queuing Model'? Explain. | 2 |
| 5. What are the properties of 'Random Numbers'? | 3 |
| 6. Briefly explain about 'Pseudo-Random Number'. | 2 |
| 7. What is the process of constructing 'Histogram'? Explain. | 3 |
| 8. Differentiate between 'Verification' and 'Validation'. | 2 |
| 9. Explain the purpose of 'Confidence-Interval Estimation'. | 3 |
| 10. Discuss about 'Terminating Simulation'. | 2 |

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PART – B (50 Marks)

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| 11. Draw and explain the flowchart, which shows the steps in a Simulation Study. | 10 |
| 12. List and explain about various characteristics of 'Queuing Systems'. | 10 |
| 13. Explain about the following types tests for Random Numbers. | 5x2 |
| a) Frequency Tests b) Runs Tests c) Autocorrelation Tests | |
| d) Gap Tests e) Poker Tests | |
| 14. a) Explain about following types of Goodness-of-Fit Tests. | 3+3 |
| i) Chi-Square Test ii) Chi-Square Test with Equal Probabilities | |
| b) Differentiate between 'Covariance' and 'Correlation'. Give suitable examples. | 4 |
| 15. a) Describe about the concept of 'Point Estimation' to measure the performance. | 6 |
| b) Discuss about 'Steady-State Simulations'. | 4 |
| 16. a) What are the features of 'SIMSCRIPT' language? Explain. | 5 |
| b) Explain how to validate Input-Output using Turing Test. | 5 |
| 17. Write short notes on any two of the following: | 5+5 |
| a) Erlang Distribution | |
| b) Bonferroni Approach | |
| c) Weibull Distribution. | |