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Question Paper Code : 65072

5 Year M.Sc. DEGREE EXAMINATION, MAY/JUNE 2013.

Seventh Semester

Software Engineering

XCS 472 — MODELLING AND SIMULATION

(Common to : 5 Year M.Sc. Computer Technology/5 Year M.Sc. Information Technology)

(Regulation 2003)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages of simulation?
2. Define entity activity and attribute.
3. What is Poisson distribution?
4. What are the characteristics of queueing system?
5. What are the statistical properties of random numbers?
6. Define runs test.
7. What are the languages used for simulation?
8. What is the use of GENERATE block?
9. Define covariance.
10. Give some suggested estimators for distributions often used in simulation.

PART B — (5 × 16 = 80 marks)

11. (a) Describe the components of a simulation system using four different examples. (16)

Or

- (b) Draw a flowchart describing the steps of simulation study. (16)

12. (a) Explain (16)

- (i) Discrete random variable
- (ii) Continuous random variable
- (iii) Cumulative distribution function.

Or

- (b) (i) Discuss the various simulation techniques. (8)

- (ii) Arrivals at a bank teller's cage are Poisson at the rate of 1.2 in a minute. Find the probability of

(1) No of arrival in the next one minute and

(2) 2 to 3 arrivals in next two minutes. (8)

13. (a) (i) How will you generate pseudo random numbers? (8)

- (ii) Given five random numbers 0.44, 0.8, 0.12, 0.007, 0.9. Perform a test of uniformity using Kolmogorov Simrnov test with $\alpha = 0.05$. (8)

Or

- (b) (i) Explain the frequency test. (8)

- (ii) Perform runs test on the following sequence of numbers. (8)

.08, .09, 0.43, 0.29, 0.42, 0.53, 0.68, 0.10, 0.76, 0.98.

14. (a) Explain the procedure to be followed in selection of simulation software. (16)

Or

- (b) (i) Write the features of a simulation language you are familiar with. (8)

- (ii) Briefly describe the output analyzer of Arena. (8)

15. (a) (i) Explain the procedure of selecting input models without data. (8)
(ii) Give examples of input data that could be (8)
(1) Normal
(2) Exponential
(3) Poisson
(4) Triangular.

Or

- (b) Explain model building, verification and validation. (16)
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