

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

15264

B. Tech 7th Semester Examination
Modeling and Simulation (OS)

IT-7002

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt any one question from Section A, B, C and D. Section E is compulsory.

SECTION - A

1. (a) What is system? What is system modeling? Differentiate between continuous and discrete system. (10)
- (b) Explain the difference between simulation and experiments. Also explain the parameters used for experiments with a system. (10)
2. (a) What is system modeling? Explain the difference between reality and the model in terms of modeling and simulation. (10)
- (b) Explain in what kind of projects modeling and simulation is preferred. (10)

SECTION - B

3. (a) How to Build and Apply Computer Simulations? Explain. (10)
- (b) What is Random number generator? Explain the generation of uniformly distributed random numbers. (10)

[P.T.O.]

2

15264

4. (a) Compare and contrast the modeling process with the scientific method: Make observations; formulate a hypothesis; develop a testing method for the hypothesis; collect data for the test; using the data, test the hypothesis; accept or reject the hypothesis. (10)
- (b) Explain Normal Distribution. (10)

SECTION - C

5. (a) What is the difference between Validation and Verification? (10)
- (b) The Third National Bank of Podunk has 6 tellers with an exponentially distributed service rate with a mean of 5 minutes. Customers arrive at the bank with exponentially distributed inter arrival times with an average inter arrival time of 1 minute. There is a single queue for customers to wait in, but the queue is restricted to 20 customers. What observation can you make about the departure rate of customers from the bank? (10)
6. (a) Give some advantages and disadvantage of Validation in Simulation. (10)
- (b) Customers calls arrive at a software support center with exponentially distributed inter arrival times with an average time between arrivals of 15 minutes. What is the probability that 5 customers will arrive between 1 and 2:30 p.m.? (10)

SECTION - D

7. (a) What is the Simulation language? Discuss the different kinds of simulation language. (10)
- (b) How Fuzzy Set is applied in Modelling and Simulation of a complex system. (10)

3

15264

8. (a) Describe the discrete and continuous simulation language with one daily life example. (10)
- (b) Discuss the role of Artificial Intelligence in Modelling and Simulation. (10)

SECTION - E

9. (a) Write the benefits of simulation in daily life.
- (b) Describe the use of simulation in education area.
- (c) Flow chart simulation language comes in which category? Give an example of it.
- (d) Give an example of each (i) Stochastic Model (ii) Continuous Model (iii) Discrete Model (iv) Static Model.
- (e) What do you understand by Queuing Model? (5×4=20)