

[Time: 2½ Hours]

[Marks:60]

Please check whether you have got the right question paper.

N.B:

1. **All questions are compulsory.**
2. Figures to the right indicate full marks.
3. Assume additional data if necessary but state the same clearly.
4. Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
5. Use of calculators and statistical tables are allowed.

- Q.1 Attempt any two of the following: (12)
- a) What is simulation? Explain the need for Simulation. 06
 - b) What is a Conceptual Model? What are the requirements of the Conceptual Model? 06
 - c) Explain the four main methods for Representing the conceptual model. 06
 - d) When & where simulation is appropriate & in-appropriate? 06
- Q.2 Attempt any two of the following: (12)
- a) What is Verification and Validation? 06
 - b) Explain the difference between data accuracy & data format. 06
 - c) How do you Compare alternatives and search experimentation? 06
 - d) Explain Terminating and non-terminating simulations. 06
- Q.3 Attempt any two of the following: (12)
- a) Explain the limitation of analytical modeling based on queuing theory. 06
 - b) Explain the three methods in simulation modeling. 06
 - c) Explain Agent based modeling and Object Oriented Design. 06
 - d) Explain Multi-Method Modeling with proper diagram. 06
- Q.4 Attempt any two of the following: (12)
- a) What is StateChart? How do Statecharts differ from action charts and flowcharts? 06
 - b) Explain the sources of randomness in the anylogical model. 06
 - c) Draw a statechart diagram for the example on “Laptop running on battery”. 06
 - d) Explain how data can be exchanged with external world. 06
- Q.5 Attempt any two of the following: (12)
- a) Explain the Framework for Conceptual Modeling. 06
 - b) Explain the relation white-box and black-box validation. 06
 - c) Explain synchronous and asynchronous communication between agents. 06
 - d) Explain Discrete events & Dynamic events. 06