

[Time:2.30 Hrs]

[Marks:75]

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.

- Q.1 Attempt any Three of the following: 15**
- a. Explain the process of simulation and state its advantages and disadvantages.
 - b. State and explain various ways to represent the conceptual model.
 - c. State and explain methods for model simplification.
 - d. Write a detailed note on continuous time simulation approach.
 - e. Explain the concept of modeling variability.
 - f. Define conceptual model. What are the requirements of conceptual model?
- Q.2 Attempt any Three of the following: 15**
- a. Explain the approaches used to perform black box validation and compare the Black Box validation with white validation.
 - b. Explain different ways of data requirement.
 - c. List the methods proposed to construct confidence interval for output data and explain batch means method to achieve it
 - d. Explain how system dynamics methods are different than discrete event modeling.
 - e. Write a note on sensitivity analysis.
 - f. Explain nature of simulation in details.
- Q.3 Attempt any Three of the following: 15**
- a. Describe Asynchronous and Synchronous time models in agent base models.
 - b. Explain using suitable example the following stages in building ABM
 - a. The problem statement
 - b. Phases of modeling
 - c. What do you mean by level of abstraction in simulation? Explain.
 - d. Explain the Time dimension in agent-based models.
 - e. Explain how system dynamics methods are different than discrete event modeling.
 - f. How 3-D animation helps in modeling and simulation.
- Q.4 Attempt any Three of the following: 15**
- a. How to design State charts for dynamic objects? Explain using suitable example.
 - b. Write a note on Randomness in system dynamics model.
 - c. Explain the discreet events associated with queuing system.
 - d. Describe the events in tea vending machine System
 - e. Describe database connectivity objects offered by any logic with help of an example.
 - f. How to view and debug State charts at runtime? Explain.

Q.5

Attempt any Three of the following:

15

- a. Explain the process to fit a statistical distribution to empirical data.
- b. Explain different symbols used Stock and flow diagrams with suitable examples.
- c. What is simulation optimization discuss short comings in its use.
- d. Explain the Space dimension in agent-based models
- e. Explain the different procedures of generating random numbers
- f. What are the requirements of conceptual model?
