JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- 2025
B.Tech-IV Semester (CSE/IT)

COURSE CODE (CREDITS): 18B11CI413 (2)　　　　　　　　　　MAX. MARKS: 15

COURSE NAME: Modeling and Simulation Techniques

COURSE INSTRUCTORS: Dr. Vikas Baghel, Dr. Salman Raju Talluri　　　MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

Q.No	Question	CO	Marks
Q1.	a) Why might direct experimentation with a real-world system be inappropriate in certain cases? Discuss how Modeling and Simulation contribute to optimizing real-world systems. Provide examples from different fields where simulation has led to improved outcomes.	[CO1]	[2]
	b) Write a Python program using the Monte Carlo method to estimate the probability of rolling a sum of 7 when rolling two six-sided dice. Run the simulation for at least 100,000 trials.		[2]
Q2.	What are the essential components that are to be considered prior to the development of Modeling and Simulation process?	[CO1]	[4]
Q3.	a) Illustrate and explain the flowchart of the Modeling and Simulation Process, describing each step in detail.	[CO2]	[3]
	b) What is the primary distinction between verification and validation in the context of simulation modeling, and why are both processes essential for ensuring the credibility of simulation results?		[2]
Q4.	What are the different categorizations in Modeling and Simulation? Explain in details with examples.	[CO2]	[2]