R22 Regulation *Subject code: 4P5GD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Regular/Supplementary Examinations, November 2025

OBJECT ORIENTED ANALYSIS &DESIGN

(CSE(AI&ML))

Maximum Marks: 60 Date:14.11.2025 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BloomTx
1.a)	What are the main elements of a conceptual model of UML?	1M	1	L1
b)	Mention any two benefits of using UML in system design.	1M	1	L2
c)	What are common mechanisms in UML?	1M	2	L1
d)	Explain advanced relationships in UML?	1M	2	L2
e)	Describe is the purpose of an actor in a use case diagram?	1M	3	L1
f)	Differentiate between use case and activity diagram.	1M	3	L3
g)	Write any two advantages of using state machines.	1M	4	L1
h)	What is the role of time and space in advanced behavioral modelling?	1M	4	L1
i)	Define collaboration in UML.	1M	5	L2
j)	Name any two case studies commonly used in OOAD.	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BloomTx
2	a) Illustrate the importance and principles of modelling with suitable examples. b) Draw a diagram that show set of nodes and their relations for library management system.	5M 5M	1	L2
	OR			
3	a) Write about structural things of UML vocabulary. Give UML notation. b) Write about behavioral things in UML also give the UML notation.	5M 5M	1	L2
4	a) Construct a class diagram showing the relationship between Student, Department, and Course entities. b) What is a class diagram? What are the common properties and uses of class diagrams?	5M 5M	2	L3
	OR			

5	a) Develop an object diagram representing real-time instances of a banking system. b) Enumerate steps to model distribution of responsibilities in a system.	5M 5M	2	L3
6	a) Construct a use case diagram for an online ticket booking system. b) Explain sequence diagram with suitable example.	5M 5M	3	L3
	OR			
7	a) Develop an activity diagram for the student course registration process. b) How to model an API?	5M 5M	3	L3
8	a) Analyze the role of state transitions in capturing dynamic behavior of systems. b) Discuss about sequential substates and history states with an example.	5M 5M	4	L4
	OR			
9	a) Discuss about four types of events. b) Explain modelling techniques for events and signals.	5M 5M	4	L4
10	Explain how collaboration diagrams assist in understanding component interactions.	10M	5	L2
	OR			
11	Illustrate the architecture of the Unified Library or ATM case study using UML diagrams.	10M	5	L2