R22 Regulation *Subject code: 4E7GA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Regular Examinations, November 2025

KNOWLEDGE REPRESENTATION AND REASONING

(CSE(AI&ML))

Maximum Marks: 60 Date: 24.11.2025 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)	Define Knowledge Representation.	1M	1	1
b)	List any two varieties of logic.	1M	1	1
c)	Define abstraction in ontology.	1M	2	1
d)	Mention any one top-level ontological category.	1M	2	1
e)	What is a frame in Knowledge Representation?	1M	3	1
f)	What do you mean by semantics in Natural Language?	1M	3	1
g)	List any two types of processes.	1M	4	1
h)	What do you mean by context in AI?	1M	4	1
i)	Define Predicate logic.	1M	5	1
j)	Mention one limitation of classical logic.	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BloomTx
2	a) Discuss why Knowledge Representation and Reasoning are essential in Artificial Intelligence.	5M	1	3
	b) Explain the concept "Unity Amidst Diversity" in logic with examples.	5M	1	5
	OR			
3	a) Describe how logic plays a role in Knowledge Representation and Reasoning.	5M	1	3
	b) Discuss different types of knowledge used in AI systems.	5M	1	2
4	a) Discuss the philosophical background of ontology and its evolution in AI.	5M	2	3
	b) Describe the ontological representation of space and time with examples.	5M	2	5
	OR			
5	a) Explain the concept of ontology and its importance in AI knowledge representation.	5M	2	2

	b) Discuss the role of sets, collections, and types in organizing ontological knowledge.	5M	2	4
6	a) Explain the process and role of Knowledge Engineering in AI systems. b) Explain the various levels of knowledge representation in Artificial Intelligence.	5M 5M	3 3	2 2
	OR			
7	a) Describe how structures are represented using frames with examples. b) Illustrate with examples how rules and data interact in an expert system.	5M 5M	3 3	3 3
8	a) Explain the relationship among time, events and situations in representing processes. b) Describe concurrent processes and their importance in AI.	5M 5M	4 4	2 4
	OR			
9	a) Discuss the classification of processes with examples. b) Explain the idea of computation as a process in AI.	5M 5M	4 4	3 4
10	a) Describe the limitations of logic in handling real-world knowledge. b) Explain different language patterns used for knowledge acquisition.	5M 5M	5 4	2 4
	OR			
11	a) Explain vagueness, uncertainty, and randomness in AI systems. b) Describe various tools used for knowledge acquisition and sharing.	5M 5M	5 5	2 3