R22 Regulation *Subject code: 4E7GA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Regular/Supplementary Examinations, October 2026

KNOWLEDGE REPRESENTATION AND REASONING

(CSE (AI & ML))

Maximum Marks: 60 Date:26.10.2026 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	BTL
1.a)	Define knowledge representation.	1M	1	1
b)	What is meant by reasoning in knowledge-based systems?	1M	1	1
c)	Mention any two varieties of logic.	1M	2	1
d)	Define an ontological category	1M	2	1
e)	What is a frame?	1M	3	1
f)	Define natural language semantics.	1M	3	1
g)	What is a concurrent process?	1M	4	1
h)	Define constraint satisfaction.	1M	4	1
i)	What is fuzzy logic?	1M	5	1
j)	What is meant by sharing ontologies?	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Apply the concept of knowledge representation to explain how a simple real-world problem can be represented in a knowledge-based system.	5M	1	3
	b) Explain the concepts of knowledge, representation and reasoning and discuss their relationship	5M		2
	OR			
3	a) Analyse why knowledge representation and reasoning are important for computer implementation.	5M	1	4
	b) Evaluate the role of logic in representing knowledge and supporting reasoning.	5M		5
4	a) Explain the philosophical background of ontology and the need for ontological categories.	4M	2	2
	b) Analyse the role of top-level categories in describing physical entities.	6M		4
	OR			
5	a) Apply the concepts of sets, collections, types and categories to organize knowledge in an ontology.	5M	2	3
	b) Evaluate the importance of representing space and time in an ontology.	5M		5

6	a) Explain knowledge engineering and steps involved in it. b) Apply frame-based representation to describe a structured object of your choice.	5M 5M	3	2 3
	OR			
7	a) Analyse the role of rules and data in knowledge representation. b) Evaluate the significance of object-oriented systems as a knowledge representation approach.	5M 5M	3	4 5
8	a) Explain the concepts of times, events and situations in process representation. b) Apply the concept of process classification to distinguish different types of processes.	5M 5M	4	2 3
	OR			
9	a) Analyse the relationship among procedures, processes and histories. b) Evaluate the importance of concurrent processes in knowledge representation.	5M 5M	4	4 5
10	a) Explain vagueness, uncertainty, randomness and ignorance as forms of imperfect knowledge. b) Analyse why conventional logic has limitations in representing imperfect knowledge.	4M 6M	5	2 4
	OR			
11	a) Apply fuzzy logic to explain how vague knowledge can be represented. b) Evaluate the importance of sharing ontologies in knowledge acquisition and sharing.	5M 5M	5	3 5