R22 Regulation *Subject code:4O7HA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, October 2026

FUNDAMENTALS OF AI

(CSE(DS))

Maximum Marks: 60 Date: 02.11.2026 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)	Describe the structure of a typical intelligent agent.	1M	1	1
b)	Briefly explain the history and evolution of AI.	1M	1	1
c)	What is Breadth-First Search? Mention its key characteristic.	1M	2	1
d)	What is A* Search? Why is it considered better than Greedy Search?	1M	2	1
e)	Define propositional logic with an example.	1M	3	1
f)	What are events in the context of knowledge representation?	1M	3	1
g)	What is a Bayesian Network?	1M	4	1
h)	How do Bayesian Networks handle uncertainty in real-world scenarios?	1M	4	1
i)	Define supervised learning with an example.	1M	5	1
j)	List two common application domains of robots.	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Differentiate between fully observable and partially observable environments.	10M	1	4
	OR			
3	Write a short note on the Structure of Intelligent Agents.	10M	1	2
4	Use Iterative Deepening Search to solve a binary tree traversal problem and explain its benefits.	10M	2	3
	OR			
5	Justify the effectiveness of Bidirectional Search in large problem spaces compared to BFS and DFS.	10M	2	3
6	Analyze the differences between propositional logic and First-Order Logic in terms of expressiveness.	10M	3	4
	OR			
7	Demonstrate how unification works in First-Order Logic with suitable examples.	10M	3	4
8	Analyze the assumptions made in Naive Bayes models and discuss their limitations.	10M	4	4

	OR			
9	Justify the use of probabilistic models over deterministic models in real-world AI applications.	10M	4	3
10	Use ensemble learning techniques (e.g., bagging or boosting) to improve the accuracy of a classification task.	10M	5	2
	OR			
11	Compare different types of learning methods: supervised, unsupervised, and reinforcement learning.	10M	5	2