Code: 20IT2702A

IV B.Tech - I Semester –Supplementary Examinations
OCTOBER 2024

FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE
(Common for ALL BRANCHES)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
         2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

		UNIT – I	
1.	a)	Explain BFS with an example.	7 M
	b)	How do AI problems differ from problems in other engineering? Explain.	7 M
		OR	
2.	a)	Illustrate how AI is used to solve Tic-Tac-Toe problem.	7 M
	b)	What is state space search and how does it apply to problem-solving in AI? Discuss the concepts of states, actions and goals.	7 M
		UNIT – II	
3.	a)	Provide an example of a problem where Hill Climbing is used. Describe how Hill Climbing is applied to this problem and discuss its effectiveness.	7 M

	b)	Discuss the Generate and Test search technique? How does it work in the context of solving problems in AI?	7 M
		OR	
4.	a)	Demonstrate the role of heuristic functions in Best First Search. How are heuristics used to guide the search process?	7 M
	b)	Explain typical steps involved in Problem Reduction. How are subproblems identified and solved?	7 M

UNIT-III

5.	a)	Write a short note on knowledge representation in AI. Why is it crucial for AI systems?	7 M
	b)	What is backward reasoning? How does it differ from forward reasoning? Provide an example of its application.	7 M
		OR	
6.	a)	List out some challenges associated with matching in knowledge representation. How do these challenges impact the performance of AI systems?	7 M
	b)	What is declarative knowledge? How does it differ from procedural knowledge?	7 M

UNIT – IV

7.	a)	Explain Depth-First Search (DFS) and Breadth-First Search (BFS) algorithms. Describe their basic principles and how they are implemented.	7 M
	b)	What are some challenges associated with nonmonotonic reasoning?	7 M

		OR	
8.	a)	What are the advantages of using semantic nets for representing knowledge in AI? Provide examples of applications where semantic nets are particularly effective.	7 M
	b)	What are frames in knowledge representation? Describe their structure and how they are used to represent knowledge.	7 M

UNIT – V

9.	a)	What is goal stack planning? Describe the basic principles and how it is used to achieve problem-solving in AI.	7 M
	b)	What is knowledge acquisition in the context of expert systems? Why is it a critical process?	7 M

		OR	
10.	a)	What is hierarchical planning and how does it differ from other planning approaches?	7 M
	b)	Discuss some common challenges faced during knowledge acquisition.	7 M