GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3171105   **Date: 17/06/2023**

Subject Name: Introduction of Artificial Intelligence

Time: 10:30 AM TO 01:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	What is Artificial Intelligence (AI)? Why we need AI?	03
	(b)	List and discuss the applications of AI.	04
	(c)	How an algorithm's performance is evaluated? Compare different uninformed search strategies in terms of the four evaluation criteria.	07
Q.2	**(a)**	Discuss the concept of "Heuristic" with an example.	03
	(b)	What is the significance of the "Turing Test" in AI? Explain how it is performed.	04
	(c)	What is production system? Explain characteristics of production system.	07
		OR	
	(c)	Explain how a problem can be analyzed based on its characteristics. Analyze the game of "8-Puzzle" based on these characteristics	07
Q.3	**(a)**	Define agent. Explain how agents interact with environment.	03
	(b)	Explain why problem formulation must follow goal formulation.	04
	(c)	What do you understand by formulating problems? Explain the steps of problem formulation using vacuum world example.	07
		OR	
Q.3	**(a)**	Differentiate between depth-first search and depth-limited search.	03
	(b)	Explain use of route-finding algorithm for airline travel planning system.	04
	(c)	Describe Breadth First Search. Comment on the optimality of this method.	07
Q.4	**(a)**	What is propositional logic?	03
	(b)	Briefly discuss Admissibility of A* searching algorithm.	04
	(c)	Using suitable example, explain the Brute Force problem-solving technique. Also, write its advantages and disadvantages.	07
		OR	
Q.4	**(a)**	Define refinement in planning problem.	03
	(b)	Describe differences and similarities between problem solving and planning.	04
	(c)	Explain branch and bound algorithm using suitable example. Also, write its advantages and disadvantages.	07
Q.5	**(a)**	Explain how Natural language generation will influence on content marketing.	03
	(b)	Briefly explain ABSTRIPS approach of problem solving.	04
	(c)	What do you mean by goal stack planning? Explain using suitable example.	07
		OR	
Q.5	**(a)**	What do you mean by natural language processing? Why it is required?	03
	(b)	Briefly explain top-down parsing technique.	04
	(c)	Simulate the working of Tic-Tac-Toe problem with Mini-Max technique.	07

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