Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) EXAMINATION – SUMMER 2022

Subject Code:2180703 Date:04/06/2022

Subject Name: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.**

			MARKS
Q.1	**(a)**	List out 3 applications of AI. Also state which AI method has been used in these particular applications?	**03**
	(b)	How are search methods useful in solving AI problems? State one example of it.	**04**
	(c)	Give state space representation for 8 puzzle problem. Also state one heuristic function for this problem.	**07**
Q.2	**(a)**	Explain Bay's theorem.	**03**
	(b)	Discuss any one un-informed search method.	**04**
	(c)	Discuss cryptarithmetic problem with an example.	**07**
		OR	
	(c)	What is constrain satisfaction problem? How can such problem be solved? Can Tic-Tac-Toe game be considered as a constrain satisfaction problem? Why?	**07**
Q.3	**(a)**	Discuss Admissibility of A* (A-star) algorithm.	**03**
	(b)	Discuss AND-OR graph and its application.	**04**
	(c)	Discuss seven problem characteristics with examples.	**07**
		OR	
Q.3	**(a)**	Discuss any 3 problem characteristics with respect to the Water Jug problem.	**03**
	(b)	Discuss best first search method.	**04**
	(c)	Discuss hill climbing search method with its limitations.	**07**
Q.4	**(a)**	Discuss CUT in prolog.	**03**
	(b)	Write a prolog program to find sum of all the numbers of a list	**04**
	(c)	Consider following facts. 1. Every child loves Santa. 2. Every child loves every candy. 3. Anyone who loves some candy is not a nutrition fanatic. 4. Anyone who eats any pumpkin is a nutrition fanatic. 5. Anyone who buys any pumpkin either carves it or eats it. 6. John buys a pumpkin. 7. Lifesavers is a candy. Use resolution and prove: If John is a child, then John carves some pumpkin	**07**
		OR	
Q.4	**(a)**	Discuss FAIL in prolog.	**03**
	(b)	Write a prolog program to find maximum number from a list.	**04**

	(c)	Explain Semantic Net and Frame with example.	**07**
Q.5	**(a)**	Write Prolog Program to solve Tower of Hanoi Problem.	**03**
	(b)	Which type of problems can be solved by Alph-Beta cutoff method? How it is better than Min-Max method?	**04**
	(c)	Discuss Min-Max search method with an example.	**07**

OR

Q.5	**(a)**	Enlist various de-fuzzification methods.	**03**
	(b)	Discuss various ANN applications.	**04**
	(c)	Explain syntax and semantic analysis of natural language processing in detail.	**07**

****