Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: 1720203 **Date: 01-01-2013**

Subject Name: Artificial Intelligence

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define a good heuristic function to solve 8-puzzle problem.	**07**
	(b)	Write a note on state space representation and explain the terms goal state, path, initial state and successor.	**07**
Q.2	**(a)**	Explain forward chaining and backward using salesperson problem example.	**07**
	(b)	Describe A* algorithm with example. Also explain iterative deepening.	**07**
		OR	
	(b)	Write and describe AO* algorithm with suitable example.	**07**
Q.3	**(a)**	Explain minimax search procedure. Also describe the role of alpha-beta cutoff.	**07**
	(b)	Explain expert system with its architecture.	**07**
		OR	
Q.3	**(a)**	Explain semantic nets. How it improves the knowledge representation.	**07**
	(b)	Explain different types of learning.	**07**
Q.4	**(a)**	Consider the following statements: 1. Marcus was a man 2. Marcus was a Pompeian 3. All Pompeian were Romans 4. Caesar was a ruler 5. All romans were either loyal to Caesar or hated him 6. People only try to assassinate rulers they are not loyal to 7. Marcus tried to assassinate Caesar Convert these sentences into predicate logic then find “whether Marcus was loyal to Caesar” using resolution	**10**
	(b)	Explain unification algorithm with example.	**04**
		OR	
	(b)	Explain forward and backward reasoning.	**04**
Q.5	**(a)**	Explain the architecture of neural network. Also explain the application areas of neural networks.	**07**
	(b)	Define fuzzy set theory. Differentiate fuzzy sets with crisp sets with examples.	**07**
		OR	
Q.5	**(a)**	Explain genetic algorithm.	**07**
	(b)	Explain Error Back propagation algorithm.	**07**

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