Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME-1st SEMESTER– EXAMINATION – WINTER 2014

Subject Code:2710212 **Date:**12/01/**2014**

Subject Name: Artificial Intelligence

Time: **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Fit the number 1 to 9 in a 3×3 Tic-Tac-Toe board in such a way that sum of each row, each column and each diagonal is 15. Explain how this method can be used to solve the Tic-Tac-Toe problem.	**07**
	(b)	Explain partially commutative and commutative production system with examples.	**07**
Q.2	**(a)**	Analyze (i) Water jug problem and (ii) Travelling salesman problem with respect to the seven problem characteristics.	**07**
	(b)	Explain the terms F`,SOLVED and FUTILITY in AO* algorithm with example.	**07**
		OR	
	(b)	What do you understand by heuristic ? Explain hill climbing method. Compare it with generate and test method.	**07**
Q.3	**(a)**	Is the minimax procedure a depth-first or breadth-first search procedure ? Why does the search in the game playing problems always proceed forward from the current position rather than backward from a goal state?	**07**
	(b)	Explain alpha-beta cut-offs in game playing with example.	**07**
		OR	
Q.3	**(a)**	Why does game playing appeared to be a good domain to explore machine intelligence?	**07**
	(b)	What are essential characteristics of knowledge representation system? Also write some common schemes of knowledge representation.	**07**
Q.4	**(a)**	Consider the following sentence (i) If X is on top of Y then Y support X (ii) If X is above Y and they are touching each other then X is on top of Y. (iii) A cup is above a book (iv) A cup is touching a book Translate these statements in predicate logic. Prove by backward reasoning ñ Book Support Cupò	**07**
	(b)	What are the factors which influence a systemôs ability to learn?	**07**
		OR	
Q.4	**(a)**	Explain probabilistic reasoning and Bayeôs theorem with examples.	**07**
	(b)	Explain how fuzzy logic is beneficial over classical probability theory. Give examples where fuzzy logic can be used.	**07**
Q.5	**(a)**	Explain cross-correlation of two random processes and its significance in Artificial intelligence.	**07**
	(b)	What is the life cycle of an expert system? Explain.	**07**
		OR	
Q.5	**(a)**	Write the applications of neural networks. How does a neural network work?	**07**

Explain.

(b) Write short notes on ant two of the following **07**

(i) Expert System-MYCIN

(ii) Unification Algorithm

(iii) Fuzzy Logic

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