Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I(New course)• EXAMINATION – WINTER- 2015

Subject Code: 2710212 **Date: 04/01/2016**

Subject Name: Artificial Intelligence

Time:2:30 pm to 5:00 pm **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)**	Explain the purpose of production system with examples. Also explain the various types of productions systems.	**07**
	(b)	Explain how to branch and bound techniques could be use to find the shortest solution to a water jug problem.	**07**
Q.2	**(a)**	Explain heuristic function. Give heuristic function for 8 puzzle and Tic-Tac-Toe Problem.	**07**
	(b)	What is weak method? Why is it called weak method? Differentiate between hill climbing and generate and test showing its limitations and advantages.	**07**
		OR	
	(b)	Explain constraint satisfaction with example. Give the algorithm of constraint satisfaction.	**07**
Q.3	**(a)**	Explain alpha-beta cut-offs in game playing with example.	**07**
	(b)	What do you understand by semantic net? Represent the following sentences in semantic Net: (i) Football is a game, it is played by ball, it is popular in Europe. (ii) Rameshôs age is 50 Years, Sureshs age is 45 years, Ramesh is older than Suresh.	**07**
		OR	
Q.3	**(a)**	Write the rules used in conceptual dependency representation. Represent the following in conceptual dependency: (i) Amit went city to eat burger (ii) Aditi bagged Abhinav for a pen.	**07**
	(b)	What steps should be taken to speedup a resolution? Give an example of resolution using predicate logic.	**07**
Q.4	**(a)**	What are the factors which influence a systemôs ability to learn?	**07**
	(b)	Explain how fuzzy logic is beneficial over classical probability theory. Give examples where fuzzy logic can be used.	**07**
		OR	
Q.4	**(a)**	Derive Bayôs theorem of probability. Explain with suitable example its use in expert system.	**07**
	(b)	Explain cross-correlation of two random processes and its significance in artificial intelligence.	**07**
Q.5	**(a)**	Name some successful expert systems and discuss any one of them in detail.	**07**
	(b)	How single layer network works? Why the perceptron training algorithms are required?	**07**
		OR	
Q.5	**(a)**	What is the difference between training and learning? State and prove the delta rule to train perception.	**07**
	(b)	What is neural network? How does a neural network work? Explain.	**07**