Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1720203 **Date: 20-06-2014**

Subject Name: Artificial Intelligence

Time: 02:30 pm - 05:00 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)**	List the characteristics of Artificial Intelligence. Explain how problems can be represented in AI.	**07**
	(b)	Explain the purpose of production system with examples. Also explain the various types of production systems.	**07**
Q.2	**(a)**	Explain the terms f(), g, h(), OPEN and CLOSE in A* algorithm with example.	**07**
	(b)	Explain Min-Max algorithm and Alpha-Beta pruning.	**07**
		OR	
	(b)	Explain the following terms in game playing with examples. i) Minimax (Position, Depth, Player) ii) Deep Enough (Position, Depth)	**07**
Q.3	**(a)**	Illustrate the use of First-Order-Logic to represent the knowledge.	**07**
	(b)	Explain how Bayesian statistics provides reasoning under various kinds of uncertainty.	**07**
		OR	
Q.3	**(a)**	What are the different types of resolution? Give an example of resolution using predicate logic.	**07**
	(b)	What are the essential characteristics of a knowledge representation system? Also write some common schemes of knowledge representation	**07**
Q.4	**(a)**	Explain monotonic and non-monotonic reasoning with examples.	**07**
	(b)	Discuss conceptual dependency and explain how information can be represented using conceptual dependency.	**07**
		OR	
Q.4	**(a)**	Explain how fuzzy logic is beneficial over classical probability theory. Give examples where fuzzy logic can be used	**07**
	(b)	Discuss the various steps in the Natural Language Processing (NLP) process.	**07**
Q.5	**(a)**	Consider an incandescent bulb manufacturing unit. Here machines M1, M2 and M3 make 30%, 30% and 40% of the total bulbs of their output, let's assume that 2%, 3% and 4% are defective. A bulb is drawn at random and is found defective. What is the probability that the bulb is made by machine M1, M2 or M3.	**07**
	(b)	Explain the principal of Back Propagation. Derive the Back Propagation algorithm for weight updation between the output layer and hidden layer.	**07**
		OR	
Q.5	**(a)**	Give the architecture of expert system and explain in detail the building blocks of expert system.	**07**
	(b)	Write a short note on Neural Network.	**07**

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