Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2722314 **Date: 27/05/2016**

Subject Name: Artificial Intelligence for Information Technology

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.**

Q.1 **(a)** Analyze Chess, Travelling Salesman Problem (TSP) and Tower of Hanoi problem with respect to the following problem characteristics. **07**

(a) Is the problem decomposable?
(b) Can solution step be ignored?
(c) Is the solution state or a path?
(d) Is the universe predictable?

(b) What is Iterative Deepening search? Explain with suitable example. Also state advantages for the same over BFS (Breadth first search) and DFS (Depth first search). **07**

Q.2 **(a)** Explain Best first search algorithm with example. **07**

(b) Assume the following facts: **07**

(a) Steve only likes easy courses.
(b) Science Courses are hard.
(c) All the courses in the basket weaving department are easy.
(d) BK301 is a basket weaving course.

Use resolution to answer the question. ñWhat course would Steve like?

OR

(b) Explain how fuzzy logic is beneficial over classical probability theory. Give Examples where fuzzy logic can be used. **07**

Q.3 **(a)** Explain the Minimax search algorithm for the game of tic-tac-toe. Can we apply alpha-beta pruning strategy to improve search efficiency for this game? Justify your answer. **07**

(b) Explain Unification Algorithm. **07**

OR

Q.3 **(a)** What do you mean by Learning? Discuss Rote learning. **07**

(b) Explain rule based system architecture. **07**

Q.4 **(a)** Explain architecture of neural networks and application areas of neural networks. **07**

(b) Explain Bayesian network and its usage in probabilistic reasoning with suitable example. **07**

OR

Q.4	**(a)**	Consider the set of input training vectors x1, x2, x3 and initial weight vector w1 as follows. x1=[1 -2 0 -1], x2=[0 1.5 -0.5 -1], x3=[-1 1 0.5 -1] ,w1 = [1 -1 0 0.5] The learning constant is assumed to be c = 0.1. The teacher's desired responses for x1, x2, x3 are d1= -1, d2= -1, d3= 1 respectively. Show the steps of learning according to the perception learning rule.	**07**
	(b)	Explain defuzzification techniques.	**07**
Q.5	**(a)**	Give the architecture of expert system and explain in detail the building blocks of expert system.	**07**
	(b)	Explain error-back propagation technique in multilayer neural network.	**07**
		OR	
Q.5	**(a)**	Explain Expectations and Moments with example.	**07**
	(b)	Semantic nets improve the knowledge representation; Justify your answer with suitable example.	**07**

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