Seat No.: Enrol	ment No
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GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER IV (NEW) - • EXAMINATION - WINTER 2016

Subject Code: 2740203 Date: 26/10/2016 Subject Name: Soft Computing

Time:2:30 pm to 05:00 pm

Instructions:

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

Q.1	(a)	Differentiate fuzzy set and crisp set? Also Mention some applications of Fuzzy logic.	07
	(b)	Compare the advantages of GA over conventional algorithms.	07
Q.2	(a) (b)	What do you mean by NN architecture? Describe membership function and Fuzzy inference machine? OR	07 07
	(b)	Classify the methods of defuzzification?	07
Q.3	(a)	Mention the role of fitness function in GA and what are the Parameters of GA?	07
	(b)	For derivative -based learning procedure why a sigmoidal function is used instead of a step function?	07
		OR	
Q.3	(a)	Explain the Genetic algorithm based back-propagation network with an example.	07
	(b)	Explain the Adaptive neuro fuzzy based inference system with an example.	07
Q.4	(a)	Explain α -cut and strong α -cut of a fuzzy set.	07
	(b)	Explain Following terms: a) Learning Rate b) Momentum factor	07
		OR	
Q.4	(a) (b)	Explain the basis of Fuzzy relations and projections using example. Discuss the major applications of hybrid fuzzy genetic algorithm.	07 07
Q.5	(a)	Take any maximization problem with some objective function and some constraints. Apply genetic algorithm to find its maximum value in first generation.	07
	(b)	Explain the case study of the applications of Neural Network for Stability analysis of interconnected system	07
o -		OR	c =
Q.5	(a)	Develop a typical case study in which Fuzzy logic is used as a model and controller.	07
	(b)	How can TSP be solved using GA? Describe operation performed in different phases using suitable examples.	07

Total Marks: 70