GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 1722308 **Date: 05-06-2013**
Subject Name: Soft Computing
Time: 10.30 am – 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)**	Explain various architectures of neural network.	07
	(b)	Explain following operations on fuzzy sets with suitable example. Union, intersection, complement, product of two fuzzy sets, equality, power of fuzzy set, difference.	07
Q.2	**(a)**	Compare various parent selection methods used in GA.	07
	(b)	Explain perceptron model of neural network with its limitations.	07
		OR	
	(b)	Write steps to train the multilayer feedforward network using backpropagation learning algorithm.	07
Q.3	**(a)**	Explain the variations of standard backpropagation algorithm?	07
	(b)	Explain the steps to recognize the given pattern in hetrocorrelator using Koskoøs discrete BAM with suitable example.	07
		OR	
Q.3	**(a)**	Explain fuzzy quantifiers and fuzzy inference?	07
	(b)	Mention the situations when to use GA for application? What are benefits of GA?	07
Q.4	**(a)**	Explain multilevel and multimodal optimization.	07
	(b)	Explain the steps to optimize the weights of ANN using GA with suitable example.	07
		OR	
Q.4	**(a)**	What are LR type fuzzy numbers? Explain architecture of fuzzy neuron and fuzzy backpropagation network.	07
	(b)	Explain graphical method to represent inference in FAM with suitable example.	07
Q.5	**(a)**	Explain the steps to train the fuzzy BP networks with suitable example.	07
	(b)	What are the decomposition rules in FAM?	07
		OR	
Q.5	**(a)**	What is fuzzy logic controller? Explain its framework.	07
	(b)	How genetic algorithm is used in design of fuzzy logic controller?	07

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