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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER M.TECH DEGREE EXAMINATION, MAY 2016

Computer Science and Engineering

Stream: Computer Science and Engineering

01CS6154: Soft Computing

Max. Marks: 60 Duration: 3 Hours

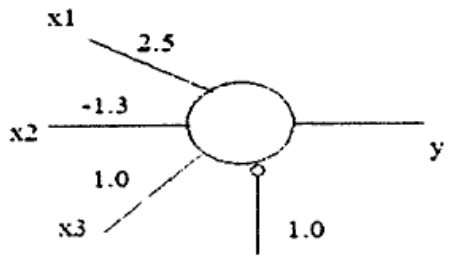
Instructions: Answer any Two questions from each Part

Part A

1. a) Explain the properties of neural network. (04 marks)

   b) Construct a feed-forward network with five input nodes, three hidden nodes and four output nodes that has lateral inhibition structure in the output layer. (05 marks)

2. a) The figure shows a neuron with activation function $\varphi(u) = \frac{0.6}{1+\exp(10.2u)}$ where u indicates total synaptic input and output activation of the neuron with x1= 0.6, x2 = 2 and x3 = - 0.4. Explain the figure with respect to neural networks algorithms. (06 marks)



   b) Distinguish between supervised, unsupervised learning and reinforces learning. (03 marks)

3 a) State the properties of processing element of an artificial neural network. (04 marks)

	b) Illustrate an example of Neural Network model with 3 activation function.	(05 marks)

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Part B

4	a) Using Madaline network, implement XOR function with bipolar inputs and targets. Assume the required parameters for training the network.	(06marks)
	b) State the significance of error portions Delta values in back propagation algorithm.	(03marks)
5	a) Implement the AND and XOR function using McCulloch-Pitts neuron.	(05 marks)
	b) Draw the architecture of back propagation algorithm.	(04 marks)
6	a) Represent the fuzzy set operations using Venn diagram.	(03 marks)
	b) Compare and contrast classical logic and fuzzy logic.	(03 marks)
	c) Describe the importance of fuzzy-sets and its application in engineering sector.	(03 marks)

Part C

7	a) Explain the weight determination GA based BPNN.	(6 marks)
	b) With an example explain fuzzy genetic model.	(6 marks)
8	a) Explain how optimization technique works in travelling sales man problem.	(6 marks)
	b) List few applications of hybrid fuzzy genetic algorithm systems and neuro fuzzy system.	(6 marks)

9 a) Mention the characteristic and properties of neuro -fuzzy hybrid system. (06marks)

b) How are genetic algorithm utilized for optimization of the weights in neural network architecture. (06marks)