## **GUJARAT TECHNOLOGICAL UNIVERSITY** M. E. - SEMESTER - I • EXAMINATION - SUMMER • 2013

Subject code: 710423N **Subject Name: Neuro Computing and Applications** Time: 10.30 am – 01.00 pm Instructions:

**Total Marks: 70** 

Date: 17-06-2013

1. Attempt all questions.

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- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Explain in brief selection of different parameters in Back propagation 07 neural network. .
  - (b) What is generalization of neural network? Explain following properties and 07 capabilities offered by neural networks: i) Non linearity ii) adaptivity
- Q.2 (a) Describe in brief following factors affecting the performance of artificial 07 neural network models.
  - i) Activation functions
  - ii) Selection of number of hidden neurons/layers
  - (b) Explain in brief the necessary steps for Back Propagation Learning 07 algorithm. Clearly mentions all assumptions made.

## OR

- (b) Explain in brief, fundamentally different classes of neural Network 07 architectures.
- Q.3 (a) Explain in brief; feed forward architecture of neural network architectures. 07 How it is different than other fundamental architectures?
  - (b) Consider the typical problem for training using BP algorithm, where 07 training set is given as under: OUTPUT

Sr.No **INPUTS** 

0.16 0.12 0.08 0.04 0.2

a) Compute the forward stage wise outputs using sigmoid as activation function also compute the error.

## OR

- Q.3 (a) Explain any two models for associate memory with necessary details. 07
  - (b) Consider an auto associative net with the bipolar step function as the 07 activation function and weights set by Hebb rule with main diagonal elements set to zero.

a) Find the weight matrix to store vector  $v = (1 \ 1 \ 1 \ 1 \ -1 \ -1)$ 

b) Test the response of the network with the same input.

0.4 (a) What is stability oplasticity dilemma? List related questions that one need 07 to address to resolve the dilemma.

(b) Discuss application of neural networks in any pattern recognition problem 07 in brief.

## OR

- Q.4 (a) What is Associative Memory? Explain in brief working of Associative 07 Memory (AM) with its different classes.
- Q.4 (b) Discuss application of neural networks in any time series forecasting 07 application in brief.

Q.5	(a)	Compare Radial Basis Function networks and multi layer Perceptron.	07
	(b)	Explain NARX model for recurrent network architectures in brief.	07
		OR	
Q.5	(a)	Explain with necessary details RBF networks. Also give details with	07
		necessary assumptions how it can solve EXOR problem.	
	(b)	Explain Simple recurrent network (SRN) model architectures for dynamic	07
		recurrent NN in brief.	

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