Enrolment No.___

GUJARAT TECHNOLOGICAL UNIVERSITY M.E –Ist SEMESTER–EXAMINATION – JULY- 2012

Subject code: 710423N

Subject Name: Neuro Computing and Applications

Time: 2:30 pm – 05:00 pm

Total Marks: 70

Date: 11/07/2012

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) What is generalization of neural network? Explain following properties and 07 capabilities offered by neural networks: i) Non linearity ii) adaptivity
 - (b) Explain in brief; feed forward architecture of neural network architectures. How it is 07 different than other fundamental architectures?
- Q.2 (a) Start with output MSE equation for Back propagation error and with necessary steps 07 derive weight updating equations for neuron j when a) neuron j is an output node and b) neuron j is hidden node for Back Propagation Learning algorithm. Clearly mentions all assumptions made.
 - (b) Describe in brief following factors affecting the performance of artificial neural **07** network models.
 - i) Range of normalization of training data
 - ii) Type of activation function

OR

- (b) Discuss: "Selection of number of hidden nodes and Initialization of interconnecting 07 weights are important factors for successful training".
- Q.3 (a) Explain with the help of necessary block diagram learning of network with and 07 without teacher.
 - (b) Draw and explain simplified model of real neuron i.e. Mcculloch –Pitts model. What 07 are its limitations?

OR

- Q.3 (a) Explain in detail sequential and batch modes of training in neural network. 07
 - (b) A hetro associative network is given. Find the weight matrix and test the network with 07 input vector= (0010). Give your comments on the result.
 - $S_1 = (1 1 0 0)$ $t_1 = (1 0)$
 - $S_2 = (1 1 1 1 0)$ $t_2 = (0 1)$
 - $S_3 = (0 0 1 1)$ $t_3 = (1 0)$
 - $S_4 = (0 \ 1 \ 0 \ 0)$ $t_4 = (1 \ 0)$
- Q.4 (a) Explain Basic ART architecture with necessary details.
 - (b) What is stability –plasticity dilemma? List related questions that one need to address 07 to resolve the dilemma.

OR

- Q.4 (a) What is Associative Memory? Explain in brief working of Associative Memory (AM) 07 with its different classes.
 - (b) Discuss application of neural networks in character recognition problem in brief. 07
- Q.5 (a) Compare Radial Basis Function networks and Multi layer Perceptron. 07
 - (b) Explain state space model for recurrent neural architecture. 07

OR

- Q.5 (a) How Kohonen Self Organization Map (SOFM) architecture is different than back 07 propagation networks? Explain in brief, SOFM architecture.
 - (b) Explain NARX model for recurrent network architectures in brief.

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