

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –Ist SEMESTER–EXAMINATION – JULY- 2012****Subject code: 710423N****Date: 11/07/2012****Subject Name: Neuro Computing and Applications****Time: 2:30 pm – 05:00 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) What is generalization of neural network? Explain following properties and capabilities offered by neural networks: i) Non linearity ii) adaptivity **07**
- (b) Explain in brief; feed forward architecture of neural network architectures. How it is different than other fundamental architectures? **07**

- Q.2** (a) Start with output MSE equation for Back propagation error and with necessary steps 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. **07**
- (b) Describe in brief following factors affecting the performance of artificial neural network models. **07**
- 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 weights are important factors for successful training". **07**
- Q.3** (a) Explain with the help of necessary block diagram learning of network with and without teacher. **07**
- (b) Draw and explain simplified model of real neuron i.e. Mcculloch –Pitts model. What are its limitations? **07**

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 input vector= (0 0 1 0). Give your comments on the result. **07**
- $S_1 = (1\ 1\ 0\ 0)$ $t_1 = (1\ 0)$
 $S_2 = (1\ 1\ 1\ 0)$ $t_2 = (0\ 1)$
 $S_3 = (0\ 0\ 1\ 1)$ $t_3 = (1\ 0)$
 $S_4 = (0\ 1\ 0\ 0)$ $t_4 = (1\ 0)$

- Q.4** (a) Explain Basic ART architecture with necessary details. **07**
- (b) What is stability –plasticity dilemma? List related questions that one need to address to resolve the dilemma. **07**

OR

- Q.4** (a) What is Associative Memory? Explain in brief working of Associative Memory (AM) with its different classes. **07**
- (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 propagation networks? Explain in brief, SOFM architecture. **07**
- (b) Explain NARX model for recurrent network architectures in brief. **07**
