

School of Information Technology
Indian Institute of Technology Kharagpur
IT60108: Soft Computing Applications
Class Test - II

F.M. 20

Session 2014 – 2015

Time: 20 mins

I. Read the following statements carefully and mark them as true (T) or false (F).

1. A problem whose output is linearly separable can also be solved with MLFFNN.
2. The output of the perceptron with hard limit transfer function is more accurate than it is defined with any sigmoid transfer function.
3. The tanh-sigmoid function is computationally more complex than the log-sigmoid transfer function.
4. The learning techniques based on the strategy “winner takes it all” is a supervised learning.
5. Number of the neurons needed to solve problem like 3-AND Boolean logic is three.
6. Number of neurons in an ANN architecture is an ANN parameter, whereas bias input is not.
7. Number of matrix data involved in a simple recurrent neural network is seven.
8. The error calculation which is followed in “Back-propagation algorithm” is the steepest descent method.
9. It is never possible to realize an ANN with supervised learning which produces no error.
10. Simulated annealing approach is followed in unsupervised learning.

II. With reference to each question in the following, one or more option(s) is/are correct. Choose the correct option(s) only.

1. Which of the following transfer functions produces binary output only.
 - (a) Hard limit transfer function.
 - (b) Liner transfer function.
 - (c) Log-sigmoid transfer function.
 - (d) Tanh-sigmoid transfer function.

2. Which of the following logic can not be modelled with a single neuron.
 - (a) 3-AND
 - (b) 3-XOR
 - (c) NOT
 - (d) (A XOR B) AND (A OR C)

3. The dimension of weight matrix of the inter connection among neurons between hidden layer and output layer of a $l - m - n$ neural network is
 - (a) $l \times m$
 - (b) $m \times n$
 - (c) $l \times n$
 - (d) $n \times m$

4. For the same size of training data as input, the fastest learning techniques is
 - (a) Supervised training with error correction.
 - (b) Supervised training without error calculation.
 - (c) Supervised training with stochastic method.
 - (d) Supervised training with Hebbian method.

5. An ANN learn quickly if η , the learning rate assumes the following value(s).
 - (a) $\eta = 1$
 - (b) $\eta = 0$
 - (c) $\eta < 1$
 - (d) $\eta > 1$

6. Which of the following are not necessarily an essential neural network parameters.
- (a) Weight matrices.
 - (b) Value of l , m and n in $l - m - n$ network.
 - (c) Threshold values.
 - (d) Transfer functions.
7. Given a training data $\langle X, Y \rangle$, the number of neurons in the input and output layers are
- (a) $|X|$ and $|Y|$
 - (b) $|x|$ and $|y|$ where $x \in X, y \in Y$
 - (c) l and n where $l, m \geq 1$ and are with arbitrary values.
 - (d) $l \geq |x|, n \geq |y|$ where $x \in X, y \in Y$
8. If the problem is to classify input patterns, then the more preferred type of learning is/are is
- (a) Supervised with error calculation.
 - (b) Unsupervised learning with Hebbian method.
 - (c) Reinforced learning.
 - (d) Unsupervised learning with competitive method.
9. In case of layer calculation, the maximum time involved in
- (a) Input layer computation.
 - (b) Hidden layer computation.
 - (c) Output layer computation.
 - (d) Equal effort in each layer.
10. Both fuzzy logic and artificial neural network are soft computing techniques because,
- (a) In each, no precise mathematical model of the problem is required.
 - (b) Both gives precise and accurate results.
 - (c) Fuzzy gives exact result but artificial neural network does not.
 - (d) Artificial neural network gives accurate result but fuzzy logic does not.