

Seat No. : _____

LA-103
April-2014
4th Year M.Sc. (CA & IT)
(Integrated)
Neural Networks

Time : 3 Hours]

[Max. Marks : 100

1. Answer the following in brief : (Any **ten**) **20**
- (1) Explain term “Neuron-science”.
 - (2) What is signal function ? List all signal functions.
 - (3) Explain the term “Soft Computing”.
 - (4) Differentiate between feed-forward and feedback network.
 - (5) What is perceptron? How it works ?
 - (6) Explain the “Adaptivity”, properties of neural network.
 - (7) What is learning mechanism ? Explain in brief.
 - (8) Differentiate between crisp set and fuzzy set.
 - (9) Differentiate linearly separable and non-linearly separable problem.
 - (10) What are outliers and how we can solve a problem of outliers ?
 - (11) Explain the basic model of ANN.
 - (12) What is RBF (Radial Basis Function) ?
2. Answer the following : (Any **two**) **20**
- (a) Differentiate following :
 - (i) Supervised and Unsupervised learning.
 - (ii) Generalization and Regularization.
 - (b) Discuss following :
 - (i) What is memory ? Explain associative memory mode in details and how recall works in terms of associative memory.
 - (ii) Gradient Descent Algorithm.
 - (c) Explain in detail :
 - (i) What is fuzzy control machine ? Explain one application in detail.
 - (ii) Explain at least two examples of Hardware like a brain.

3. Answer the following : 20
- (a) Explain in detail back propagation algorithm. Explain flow of error with necessary equations and diagram. Give one application of back propagation.
 - (b) Attempt any **two** :
 - (i) Explain Covers theorem of separability.
 - (ii) Explain Boltzman machine in detail.
 - (iii) What are the benefits of artificial neural network in our real life ? Give three applications.

4. Do as directed : 20
- (a) Write short note on :
 - (i) Memory Based Learning
 - (ii) Environment
 - (iii) Adaptive Resonance Theory
 - (iv) Pocket Convergence Theorem
 - (v) Support Vector Machine
 - (b) What do you mean by stochastic learning algorithm ? Prove it by using example of (alpha) Least Men Square algorithm.

OR

Explain X-OR problem for non-linearly separable problem. How OR and AND problem is solved using linearly separable problem.

5. Explain : (Any **four**) 20
- (1) Genetic algorithm in detail.
 - (2) Operations in Fuzzy set.
 - (3) Cohonen's SOM (Self Organize Map).
 - (4) Pattern classification problem.
 - (5) Bays classification problem.
 - (6) Perceptrone convergence theorem.
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