G 682

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Reg. No.................................

Name...................................

B.TECH. DEGREE EXAMINATION, MAY 2014

Seventh Semester

Branch : Electronics and Communication

NEURAL NETWORKS (Elective I) (L)

(Old Scheme—Prior to 2010 Admissions—Supplementary)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 4 marks.

1. Give the definition for learning in Artificial Neural Networks (ANN). Define and distinguish between supervised and unsupervised learning and with suitable examples.

2. Draw the architecture of a simple ANN and define stability and plasticity.

3. Define local minima in BPN. What are the factors that improve the convergence of training in BPN ?

4. "Choice of initial weights play a major role in training procedure." Elucidate.

5. Name the functionalities of Kohenen network. Explain what is meant by inhibitory cluster.

6. State and explain the architecture and application of full counter propagation networks briefly.

7. Define combinational optimization problem. How the deterministic annealing differs from it ?

8. What is a cauchy machine ? How it differs from Boltzmann machines ?

9. Explain briefly a Bidirectional associative memory. How the weights are determined in a Bidirectional associative memory ?

10. What are the ideal characteristics of an auto associative memory ? How is the output noise is suppressed in auto associative memory ?

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 12 marks.

11. (i) Define activation function. If the activation function of a hidden unit a linear, show that a multilayer perception is equivalent to a single layer perception.

    (ii) What are the advantages of sigmoid function as an activation function over hard limiting function ?

Or

Turn over

12. Define decision boundary. Differentiate between linear separable and non-linearly separable problems. Draw a decision boundary line for OR function using bipolar inputs and targets.

13. Justify the term back propagation algorithm. What are the steps involved in back propagation algorithm ? When the training of a network can be stopped ?

Or

14. (i) Define learning rate in Back propagation network (BPN). Give details about a few techniques for proper choice of learning rate.

(ii) Define the property of over training. How to determine the samples needed for good training ?

15. Explain the structure and working principle of a counter propagation network. How it differs from a forward only counter propagation network ?

Or

16. (i) Define weight vectors. Explain the various techniques used to intialized weight vectors during the training of a Kohonen layer.

(ii) Explain briefly the salient features of Kohonen featured maps.

17. What is simulated annealing ? What is the significance of this method ? How it is implemented ?

Or

18. Briefly explain Boltzmann machine method and its algorithm. How the problem of local minima is avoided in this technique ?

19. Define Adaptive Resonance Theory (ART) and explain the type of learning used in this theory. Explain its working principle and list its advantages and applications.

Or

20. Define a Hepfield net and mention its applications. Explain the difference between a Hepfield net and a normal auto associative net.

(5 × 12 = 60 marks)