

# ***B.Tech. Degree VII Semester Examination, November 2006***

## **IT/CS/EC/EB/EI 705 (C) ARTIFICIAL NEURAL NETWORKS**

*(2002 Admissions onwards)*

Time: 3 Hours

Maximum Marks: 100

- I a) State and explain the perceptron learning algorithm. (8)  
b) What is linear separability? Why can't the single layer perceptron implement an X-OR gate? Explain. (12)
- OR**
- II a) With relevant equations explain Hebbian learning rule. (8)  
b) Compare LMS, perceptron and delta learning rules. (12)
- III a) Explain how momentum method improve the training time of the back propagation algorithm. (10)  
b) Explain the outer product rule. (5)  
c) When the training in a network stopped? (5)
- OR**
- IV a) Write short notes on storage capacity. (6)  
b) Explain stability and convergence in connection with ANNs. (6)  
c) Explain the relevance of the learning rate parameter  $\eta$  in B.P. algorithm. How it will affect the learning process? (8)
- V a) Explain the Kohonen's map of self organizing neural networks. (10)  
b) Discuss the use of Kohonen's model in feature extraction applications. (10)
- OR**
- VI a) Explain how counter propagation networks differs from feed forward networks. (10)  
b) In connection with training, explain the concepts of pre-processing of input vectors and initialization of the weight vectors. (10)
- VII a) How a Boltzman machine works? Mention two applications. (10)  
b) Explain anyone non-linear optimization problem where neural networks can be employed. (10)
- OR**
- VIII a) Explain simulated annealing in detail. (10)  
b) How Boltzman training is different from Cauchy training. (10)
- IX a) What are the characteristics of ART? (10)  
b) How data is stored and retrived in BAM? (10)
- OR**
- X a) Explain mutation and cross over in genetic algorithm. What are the applications of genetic algorithm? (10)  
b) Explain the stability condition in a Hopfield network. (10)

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