

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0308

Roll No.

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**B. Tech.**

(SEM. VII) ODD SEMESTER THEORY  
EXAMINATION 2010-11  
**ARTIFICIAL NEURAL NETWORKS**

Time : 3 Hours

Total Marks : 100

- Note :— (1) Attempt any two parts of each question.  
(2) All questions carry equal marks.

1. (a) Explain the biological neuron. Also describe the models of neuron.  
(b) What is the significance of weights used in artificial neural networks ? Also write the various characteristics of an artificial neural network.  
(c) What are the different learning rules ? Discuss memory based learning and Boltzmann learning in short.  

(10×2=20)
2. (a) What are the main differences between feedforward and feedback neural network architecture ? Also generate OR-function using neuron model.  
(b) Explain the working of perceptron net. What is the activation function used in the perception network ?  
(c) What is Multi-layered Architecture ? Explain the salient features of Back propagation learning algorithms and reinforcement learning.  

(10×2=20)

3. (a) Explain the architecture of the perceptron net used for pattern classification. Briefly explain the term pattern space and weight space.
- (b) Describe the steepest descent search. Also explain the  $\mu$ -Least Mean Square ( $\mu$ -LMS) learning and its applications.
- (c) Explain the architecture of a back propagation net. What is the activation function used in back-propagation network ? Explain the concept of binary Neurons for pattern classification. (10×2=20)
4. (a) Explain how Bayesian classification rule is used in probabilistic neural net. Briefly describe the multilayered network.
- (b) Draw and explain the architecture of Radial Basis Function Network (RBFN). Also differentiate the RBF networks from multilayer perceptrons.
- (c) What is simulation annealing ? Draw and explain the architecture of Boltzmann machine. (10×2=20)
5. (a) What are the three states of ART network ? How is competition performed for supervised learning and unsupervised learning ?
- (b) Write short note on learning vector quantization. Why self organising neural net is called the topology preserving maps ?
- (c) What are the basic components of a Fuzzy system ? Draw and explain the Neuro-Fuzzy system. (10×2=20)