

B. TECH.

THEORY EXAMINATION (SEM-VI) 2016-17

ARTIFICIAL NEURAL NETWORK

Time : 3 Hours

Max. Marks : 100

Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.

SECTION-A

- 1 Explain the following: (10×2=20)**
- | | |
|-------------------------------|--------------------------------|
| a) Neural Computing | g) Numbers of hidden nodes |
| b) BNN and ANN | h) Pattern association |
| c) Adaline model | i) Network inversion |
| d) ART models | j) Components of CL network |
| e) Boltzmann learning | pattern clustering and feature |
| f) Linear associative network | |

SECTION-B

- 2 Attempt any Five of the following: (10×5=50)**
- Draw full counter propagation network (Full CPN) architecture and explain the Training phases of the Full CPN
 - Explain the biological neuron. Also describe the models of neuron
 - What are the types of learning? Explain the Hebbian learning and Boltzmann learning.
 - Explain how a pattern classification problems leads to a radial basis function network. What decides the basic functions in a pattern classification problem?
 - Draw the architecture of MLP network. Derive the expressions used to update weights in back propagation algorithm for MLP network.
 - Discuss the Recognition of consonant vowel (CV) segments. Explain the texture classification and segmentation with example.
 - Briefly explain the Pattern association, Pattern classification and Pattern mapping tasks of ANN with suitable example.
 - Differentiate between Feed-back neural networks and Feed-forward neural networks. Explain stochastic networks, simulated annealing and Boltzmann machine.

SECTION-C

- Attempt any Two of the following: (15×2=30)**
- Discuss algorithm for storage of conformation in Hopfield network. Explain recall algorithm with suitable example and diagram.
 - Develop simple ANNs to implement the three input AND, OR and XOR functions using MP neurons. Explain Why XOR problem can't be solved by a single layer perceptron and how it is solved by a Multilayer Perceptron.
 - Explain the architectures of popular self-organizing maps. Derive the training algorithm of Kohonen network. Also explain how SOMs can be used for data compression
 - Explain ART networks and Features, advantages of ART models with suitable example and diagram.
 - Explain the following with suitable diagram:
 - Principal Component Analysis
 - Vector Quantization
 - Maxican Hat Networks