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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
b) BNN and ANN
c) Adaline model
d) ART models
e) Boltzmann learning
f) Linear associative network
g) Numbers of hidden nodes
h) Pattern association
i) Network inversion
j) Components of CL network pattern clustering and feature

SECTION-B

2 **Attempt any Five of the following:** **(10×5=50)**

a) Draw full counter propagation network (Full CPN) architecture and explain the Training phases of the Full CPN
b) Explain the biological neuron. Also describe the models of neuron
c) What are the types of learning? Explain the Hebbian learning and Boltzmann learning.
d) Explain how a pattern classification problems leads to a radial basis function network. What decides the basic functions in a pattern classification problem?
e) Draw the architecture of MLP network. Derive the expressions used to update weights in back propagation algorithm for MLP network.
f) Discuss the Recognition of consonant vowel (CV) segments. Explain the texture classification and segmentation with example.
g) Briefly explain the Pattern association, Pattern classification and Pattern mapping tasks of ANN with suitable example.
h) 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)**

3 a). Discuss algorithm for storage of conformation in Hopfield network. Explain recall algorithm with suitable example and diagram.

b). 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.

4 a). 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

b). Explain ART networks and Features, advantages of ART models with suitable example and diagram.

5 Explain the following with suitable diagram:

a) Principal Component Analysis
b) Vector Quantization
c) Maxican Hat Networks

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