

Code No: 07A80407

R07**Set No. 2**

IV B.Tech II Semester Examinations, April/May 2012

ARTIFICIAL NEURAL NETWORKS**Common to Electronics And Telematics, Electronics And Communication
Engineering****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Why reset mechanism is essential in ART network? Explain.
(b) Explain training algorithm of ART Network. [8+8]
2. Draw full counter propagation network (Full CPN) architecture and explain the Training phases of the Full CPN. [16]
3. (a) Explain how neural network principles are useful in control applications.
(b) Discuss a neural network model for energy minimization in a texture classification problem. [8+8]
4. (a) Explain the biological prototype of neuron. Also explain the characteristics of neuron.
(b) List and explain the various activation functions used in modeling of artificial neuron. Also explain their suitability with respect to applications. [8+8]
5. Explain the Widrow-Hoff learning rule for supervised learning in neural networks with help of an example. Why is it sometimes called the LMS learning rule? [16]
6. (a) Discuss the methods, which have been developed to improve generalization of neural network learning.
(b) Explain the following:
 - i. Activation function involved in the computation backpropagation
 - ii. Rate of learning in backpropagation algorithm. [16]
7. Discuss algorithm for storage of conformation in Hopfield network. Explain recall algorithm. [16]
8. 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. [16]

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R07**Set No. 4**

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1. 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. [16]
2. (a) Write history of artificial neural system development.
(b) List and explain the various activation functions. Also explain their suitability with respect to applications. [8+8]
3. (a) Define and explain energy (Lyapunov) function of Hopfield Neural Network.
(b) Discuss storage capacity and energy function of the Hopfield network. [8+8]
4. (a) Derive the weight update equation for discrete Perceptron and write its summary algorithm.
(b) Explain the limitations of backpropagation learning. Also explain the scope to overcome these limitations. [8+8]
5. Explain Kohonen's self-organized feature map algorithm and mention its applications. [16]
6. What are different types of learning schemes used in training of artificial neural networks? Explain each of them clearly with suitable examples. [16]
7. Discuss how a particular neural network is selected for a particular problem, viz., optimization problem, pattern recognition problem and classification problem. [16]
8. (a) Sketch the architecture of Boltzmann network and mention the steps for recall Procedure.
(b) State BAM energy function. [10+6]

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R07**Set No. 1**

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1. (a) Explain the differences between neuro-computing and conventional computers computing.
(b) List and explain the various activation functions used in ANN. [8+8]
2. Bring out the limitations of single layer Perceptrons in computing the logical functions. Suggest an alternative network to overcome the above limitations and explain the suitable learning rule for the suggested network. [16]
3. With a neat architectural diagram explain the application procedure used in Boltzmann machine. What are limitations of the Boltzmann learning? [10+6]
4. (a) Define the problem of handwritten digit recognition. With suitable diagram, explain architecture of multilayer feed forward network for handwritten character recognition.
(b) Summarize the training algorithm of multi category single layer Perceptron networks. [8+8]
5. With a neat sketch explain operation of Kohorens self-organizing feature map (SOM) algorithm. And explain for what type of problems it is most suitable. [16]
6. (a) What are the assumptions to be satisfied for a network to form a Hopfield network?
(b) Construct an energy function for the same size with N neurons. Show that the energy function decreases every time as the neuron output changes. [8+8]
7. Explain how a feed forward network can be used for character recognition. Use a sample of 7×10 pixel matrix for the recognition of letter "B". [16]
8. (a) Explain briefly about the counter propagation training algorithm.
(b) Explain the architecture of Grossberg layer and its learning algorithm. [8+8]

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R07**Set No. 3**

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ARTIFICIAL NEURAL NETWORKSCommon to Electronics And Telematics, Electronics And Communication
Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain advantages and disadvantages of ART network.
(b) Discuss significance of the following for the ART network:
 - i. Reset
 - ii. Vigilance
 - iii. Gain1 and Gain2. [8+8]
2. (a) With a neat sketch explain implementation of A/D converter using Hopfield network.
(b) Explain the problems associated in implementation of A/D converter using Hopfield network. [8+8]
3. (a) Distinguish between static neural networks and dynamic neural networks with examples.
(b) Explain applications of Hopfield networks and mention its limitations. [8+8]
4. Draw the flow-chart of Learning Vector Quantizer (LVQ) and write step-by-step Algorithm. [16]
5. (a) Explain how pattern mode and batch mode of training affect the result of backpropagation learning.
(b) What is the significance of momentum term in the backpropagation learning
(c) Explain the refinements of the backpropagation learning and also the interpretation of the result of the learning [5+5+6]
6. What do you mean by linear separator? Simulate the neural networks with following logic gates with diagrams.
 - (a) OR
 - (b) AND
 - (c) NAND
 - (d) NOR
 - (e) EX-OR
 - (f) EX-NOR. [4+12]

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7. (a) Explain with suitable examples, why neural networks can handle massive amount of input/output data more efficiently than conventional computers.
- (b) Compare the conventional computers with the parallel-distributed processing hardware. [8+8]
8. Write algorithm, applications of MADALINE. Draw its architecture. [16]

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