Code: 9D06105

M.Tech I Semester Regular & Supplementary Examinations January/February 2017
NEURAL NETWORKS & APPLICATIONS
(Common to DSCE & ECE)

Time: 3 hours   Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks
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1   (a)   Define activation function and discuss about various linear and non-linear activation functions.
    (b)   What is neural learning? Explain about supervised, unsupervised and reinforcement learning rules.

2   (a)   Briefly discuss about linear separability and the solution for EX-OR problem.
    (b)   Discuss the perceptron training algorithm with a suitable example. What are its limitations? Explain.

3   (a)   Explain the process of multi class discrimination.
    (b)   Discuss in detail the various matters relating to the performance of a multilayer perceptron trained with the back-propagation algorithm.

4   (a)   Give the architecture and explain the training algorithm for radial basis function network. Compare radial basis network with multiplayer perceptron.
    (b)   Write short note on polynomial networks.

5   (a)   What is learning vector quantizer? Explain.
    (b)   Describe adaptive resonance theory (ART) with an example.

6   (a)   Describe hamming net and maxnet with an example.
    (b)   Draw the architecture and explain the training algorithm of full counter propagation networks.

7   (a)   Give the architecture of Hopfield network and explain the training algorithm. Define energy function for auto association and explain how it can be minimized.
    (b)   Using Hebb rule of discrete BAM, find the weight matrix to store the following input and output pattern pairs: $S_1 = (1, 1, 0)$ T_1 $(1, 0)$
                    $S_2 = (0, 1, 0)$ T_2 $(0, 1)$

8   (a)   Describe how Hopfield network can be used as analog to digital converter.
    (b)   Explain in brief applications of neural networks in image processing.

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