Printed Pages : 02 DCE-30

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

PAPER ID : MC15

Roll No. | | | | | | | | | | |

M. TECH. (Sem.II)
THEORY EXAMINATION 2015-16
NEURAL NETWORKS

Time: **3** Hours Total Marks: **100**

Note : Attempt All Questions. Each Question carries equal marks.

1. Attempt any four parts of the following: (5×4=20)
   (a) What do you mean by a perceptron? Explain.
   (b) On what basis, an activation function is selected in a neural network?
   (c) Why learning is required for an ANN?
   (d) Explain the term 'training convergence'.
   (e) Give brief discussion of 'Neural Network Simulator'.
   (f) Comment on the size of a neural network to be generalized.

2. Attempt any two parts of the following: (10×2=20)
   (a) Draw and explain one hidden layer MLPNN. How will you select number of neurons in each layer?
   (b) What are various kinds of training methods used for ANN? Differentiate them. Draw suitable diagram wherever required.
   (c) Write and prove cover's theorem.

3. Attempt any two parts of the following: (10×2=20)

(a) Describe the structure of a RBFNN. How will you train it? Write algorithm.

(b) What is the role of activation function in a neural network model? Draw various activation functions.

(c) Differentiate training, validation and testing data with detailed explanation.

4. Attempt any two parts of the following: (10×2=20)

(a) What do you mean by Back-Propagation training algorithm? Derive expression for the same for a single hidden layer Feed Forward Neural Network.

(b) How Levenberg-Marquardt training algorithm is better than other BP training algorithms. Explain with mathematical expressions.

(c) Describe the structures of Hopfield and Recurrent networks. Explain their roles with the help of suitable examples.

5. Attempt any two parts of the following: (10×2=20)

(a) Classify various kinds of neural networks. How an ANN resembles with biological NN, explain

(b) Explain the process to develop a time series forecasting model using ANN.

(c) How ANN is suitable for classification? Explain with details.

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