

Roll No.

Total Pages : 2

BT-7/D-22

47246

NEURAL NETWORKS AND DEEP LEARNING

Paper-PE-CS-D411A

Time Allowed : 3 Hours]

[Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

Unit-I

1. (a) Explain the organization of brain in detail. 8
(b) Explain what is an artificial neural network and show how a basic ANN is constructed from a Biological neuron concept. 7
2. (a) Describe the characteristics of artificial neural networks? Explain taxonomy of neural network architecture. 8
(b) Briefly discuss about unsupervised learning, threshold and learning rate. 7

Unit-II

3. What is back propagation? With a schematic two-layer feed forward neural network, derive its learning algorithm. Also discuss its learning difficulties and improvements.

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4. (a) Explain the working of a Hopfield network with a neat sketch of its architecture. 8
- (b) Explain adaptive resonance theory network architecture and training algorithm. 7

Unit-III

5. Why is Kohonen network called self-organizing feature map? How many layers are there in Kohonen network self-organizing map? Discuss map architecture and training algorithm. 15
6. (a) What is Boltzman machine used for? How do Boltzman machines work? Explore the different types of Boltzman machine. 8
- (b) Write about electro-optical multipliers and holographic correlators. 7

Unit-IV

7. How is deep learning related to Machine learning? Explore machine learning algorithm. Discuss underfitting and overfitting challenges in Machine learning. 15
8. Write notes on the following :
- (a) Convolutional networks. 8
- (b) Natural language processing. 7