

Code: 9D06105

M.Tech I Semester Supplementary Examinations February/March 2018

NEURAL NETWORKS & APPLICATIONS

(Common to DSCE & ECE)

(For students admitted in 2012, 2013, 2014, 2015 & 2016 only)

Time: 3 hours

Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Compare the performance of a computer and that of a biological neural network in terms of speed of processing, size and complexity, storage fault tolerance and control mechanism.
(b) Define activation function and describe the role of the same in the artificial neuron.
(c) Distinguish between unipolar and bipolar activation functions used in artificial neural networks giving at least two examples of each.
- 2 (a) Describe McCulloch-Pitts model of a neuron. Design a network using McCulloch-Pitts neuron to realize the NOR gate.
(b) Discuss the Widrow-Hoff rule and correlation rule.
- 3 (a) What is back propagation? With a schematic two-layer feed forward neural network, derive its learning algorithm? Also discuss its learning difficulties and improvements.
(b) What is the purpose of polynomial networks?
- 4 (a) Discuss how the "Winner-Take-All" in the Kohonen's layer is implemented and explain the architecture.
(b) What is Adaptive Resonance Theory? Explain how this theory is used to explain cluster discover network.
- 5 (a) Derive expressions for the weight updation involved in counter propagation.
(b) Explain the Grossberg layer training algorithm.
- 6 (a) What is the Hopfield network? Describe how it can be used to have analog to digital conversion.
(b) State and prove bi-directional associative memory energy theorem.
- 7 (a) Describe how a neural network may be trained for a pattern recognition task. Illustrate with an example.
(b) What are invariant characteristics of neuro computing model? Explain each of them.
- 8 (a) With an example, explain how neural networks help in solving travelling salesman problem?
(b) Discuss about associative memories.
