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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.

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