

Printed Pages : 3



EEC-023

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

**PAPER ID : 131753**

Roll No.

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## B. Tech.

(SEM. VII) (ODD SEM.) THEORY  
EXAMINATION, 2014-15

### ARTIFICIAL NEURAL NETWORKS

Time : 3 Hours]

[Total Marks : 100

**Note :** Attempt all questions. Each question carries equal marks.

- 1 Attempt any **four** questions : **4×5=20**
- Draw the structure of neuron and explain. State the number of neurons and number of synapses connected to each neuron.
  - Explain the difference between biological computer and digital computer.
  - Differentiate between supervised and unsupervised learning.
  - Explain Hebbian learning rule in detail with example.
  - List the applications of artificial neural networks in various fields.
  - Draw the structure of McChuloch Pitts model of neural network and explain its basic components. Also implement AND gate using McChuloch Pitts model.

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[ Contd...

2 Attempt any **four** questions : **4×5=20**

- (a) The logic network shown in figure 1, uses the McCulloch Pitts model neuron. Find the truth table and logic functions that are implemented by networks 1 (p) and 1(q).

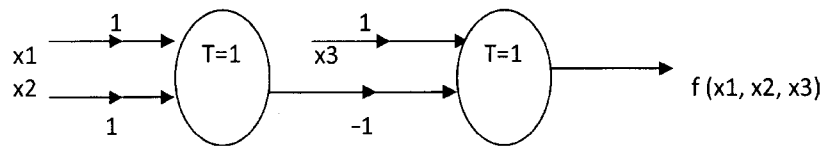


Fig - 1 (p)

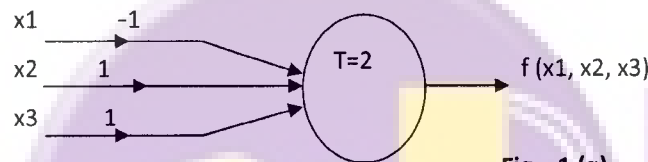


Fig - 1 (q)

- (b) Write short notes on TDNN and Time lag Neural Networks.
- (c) Explain perceptron learning rule in detail with example.
- (d) Draw the odd parity perceptron and justify it with the help of truth table.
- (e) Draw the complex neuron model.
- (f) What is recurrent network ? A recurrent network has three sources nodes, 2 hidden neurons and four output neurons. Construct an architectural graph that describes such a network.

3 Attempt any **two** questions : **2×10=20**

- (a) Explain Back Propagation learning algorithm in detail
- (b) Write short notes on :
- i. Reinforcement learning
  - ii.  $\alpha$ -LMS learning

- (c) Explain multilayered architecture and differentiate between feedforward and feedback neural networks.

**4** Attempt any **four** questions : **4×5=20**

- (a) Explain RBF networks.  
(b) Draw the XOR gate using RBF networks or any other neural networks. Justify its truth table.  
(c) Explain Principle component analysis.  
(d) Explain Delta learning rule in detail.  
(e) What is maxicum hat network?  
(f) What are different activation functions used in neural network ? Explain.

**5** Attempt any **two** questions : **2×10=20**

- (a) Explain Adaptive Resonance Theory in detail.  
(b) What is simulated annealing? Explain Boltzman machine in detail.  
(c) Explain K means algorithm. How it is different from self Organising feature MAP. There are four two dimensional vectors, as A (5, 3), B (-1, 1), C (1, -2), D (-3, -2). Divide these in K=2 clusters.

