

Printed Pages : 2



ECS085

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

**PAPER ID : 110855**

Roll No.

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**B. Tech.**

(SEM. VIII) THEORY EXAMINATION, 2014-15  
**NEURAL NETWORKS**

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all questions.

1. Attempt any FOUR parts of the following:  $5 \times 4 = 20$ 
  - (a) What is a neuron? State the law of neuron.
  - (b) What do you mean by neurocomputing?
  - (c) What is a sigmoidal activation function?
  - (d) What are the different models of artificial neural networks are in practice.
  - (e) Distinguish between supervised learning and unsupervised learning techniques.
  - (f) Describe delta learning rule of artificial neural network (ANN).
  
2. Attempt any TWO parts of the following:  $10 \times 2 = 20$ 
  - (a) Describe different normalization techniques used in data processing? Explain any two normalization techniques in detail.

- (b) Describe principal component analysis (PCA) technique of feature extraction.
- (c) Explain the following terms in detail :
- (i) Least-mean square algorithm
  - (ii) Discriminant analysis.
3. Attempt any TWO parts of the following:  $10 \times 2 = 20$
- (a) What is sum-squared error in neural network training?
  - (b) Explain the weight updation process in a back propagation training of neural network.
  - (c) Explain the following techniques in detail :
    - (i) RPROP algorithm
    - (ii) Gradient descent rule.
4. Attempt any TWO parts of the following:  $10 \times 2 = 20$
- (a) (i) What is feature extraction? Describe any two feature extraction techniques in brief.
    - (iii) Describe self-organizing feature map algorithm.
  - (b) Explain the following terms in detail:
    - (i) Recurrent networks
    - (ii) Feed-forward networks
  - (c) What are support vectors? Explain the working of support vector machines (SVM).
5. Write short notes on any FOUR of the following:  $5 \times 4 = 20$
- (a) Complex-valued neural networks
  - (b) Soft computing
  - (c) Applications of ANN
  - (d) Performance evaluation of ANN
  - (e) Genetic algorithms
  - (f) Strengths and weaknesses of ANNs
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