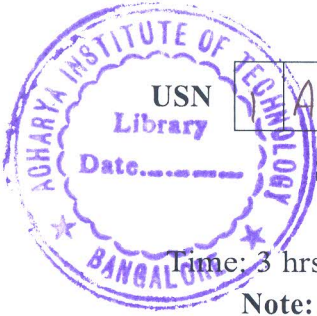


# CBCS SCHEME

15EC653



A Y I 7 E C G O 8

## Sixth Semester B.E. Degree Examination, June/July 2019 Artificial Neural Networks

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Draw and explain the artificial neuron model. Explain how activations measure similarity. (08 Marks)
- b. What is meant by an activation function? List and explain any three activation functions. (08 Marks)

OR

- 2 a. Explain feed forward and feedback architecture for neural networks. (06 Marks)
- b. Define and explain the following : i) Convex sets ii) Convex hulls iii) Linear separability iv) XOR problem v) Multilayer neural network. (10 Marks)

### Module-2

- 3 a. What is perceptron learning algorithm? Explain with the iterative algorithm. (08 Marks)
- b. Discuss  $\alpha$  - MLS algorithm. Explain the computational steps. (08 Marks)

OR

- 4 a. Discuss steepest descent search algorithm with respect to weight updation. (04 Marks)
- b. Prove that steepest descent algorithm converges to the Wiener solution. (06 Marks)
- c. Discuss square error performance function with respect to back propagation learning algorithm. (06 Marks)

### Module-3

- 5 a. What are the design objectives of SVM? Derive an expression for the total margin in two class SVM. (08 Marks)
- b. Discuss application of Radial Basis Function Neural Network (RBFNN) in face recognition. (08 Marks)

OR

- 6 a. Discuss K-mean clustering algorithm in RBFNN. (08 Marks)
- b. Explain the application of SVM in image classification. (08 Marks)

### Module-4

- 7 a. Discuss on associative memory model. (04 Marks)
- b. Explain the principle of Hopfield network with its architecture. (04 Marks)
- c. Explain Brain-State-In-A-Box neural network, provide the algorithm. (08 Marks)

OR

- 8 a. Explain simulated annealing. Provide the basic steps used in simulated annealing. (08 Marks)
- b. Write the similarities and differences between Hopfield network and Boltzmann machine. (08 Marks)

### Module-5

- 9 a. Explain the concept of vector quantization. (04 Marks)
- b. Explain the dimensionality reduction method using principal component analysis (PCA). (08 Marks)
- c. Write any one application of self organizing map. (04 Marks)

OR

- 10 a. Explain the growing neural gas algorithm. (08 Marks)
- b. Explain the concept of Kohonen self organizing feature maps. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.