CBCS SCHEME

15EC653

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. List any four neuronal signal functions. Used in ANN.   (08Marks)
   b. Define convex set, convex Hull and Linear separability with near representation.   (08 Marks)

OR

2 a. Differentiate between supervised and unsupervised Learning.   (08 Marks)
   b. State and prove perceptron convergence theorem.   (08 Marks)

Module-2

3 a. With neat diagram of adaptive linear neuron explain α – LMS learning algorithm. (08 Marks)
   b. Show that steepest descent search is guaranteed to converge to the Weiner solution.
                                                                                    (08 Marks)

OR

4 a. Compute error gradient and weight gradient for basic back propagation algorithm. (10 Marks)
   b. Mention the issues involved in data pre-processing for neural network.   (06 Marks)

Module-3

5 a. Discuss VC dimension and growth function related to statistical learning theory. (08 Marks)
   b. Explain structural risk minimization in support vector machine.   (08 Marks)

OR

6 a. Explain K-means clustering algorithm in RBFN.   (08 Marks)
   b. Illustrate how RBFN is applied for face recognition.   (08 Marks)

Module-4

7 a. Explain associative memory model for neural network.   (08 Marks)
   b. Derive an expression for energy function to prove stability of the system using cohen – Grossberg form of Hopfield model.   (08 Marks)

OR

8 a. Write a short note on Brain state in a box neural network.   (08 Marks)
   b. Explain operational details of Boltzmann machine relaxation procedure.   (08 Marks)

Module-5

9 a. Describe the concept of extracting principal components using Sanger's rule.   (08 Marks)
   b. With the help of network architecture, explain adaptive vector quantization algorithm.
                                                                                    (08 Marks)

OR

10 a. Discuss self organizing feature map algorithm.   (08 Marks)
   b. List the steps followed in growing neural gas.   (08 Marks)

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