

CBCS SCHEME

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18EC752

Seventh Semester B.E. Degree Examination, July/August 2022 Neural Networks

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. What is Artificial Neural Network? With necessary graph, explain any three neural signal functions. (10 Marks)
- b. With neat diagrams, explain the structure of feed forward and feed back architectures. (05 Marks)
- c. Explain the Learning objective of Threshold logic neuron. (05 Marks)

OR

- 2 a. Define Convex sets, Convex hull and Linear separability with relevant diagrams. (10 Marks)
- b. Explain the implementation of XOR function using Multilayered Network Architecture. (10 Marks)

Module-2

- 3 a. With necessary equations, explain the steepest gradient descent algorithm. (10 Marks)
- b. Discuss in detail, α - least mean square algorithm. (10 Marks)

OR

- 4 a. Explain with necessary block diagram, how LMS algorithm can be used for noise cancellation. (10 Marks)
- b. Derive the back propagation learning algorithm with necessary equations. (10 Marks)

Module-3

- 5 a. Explain how support vector machines can be used for image classification. (10 Marks)
- b. Illustrate with necessary steps, how radial basis function networks can solve the XOR problem. (10 Marks)

OR

- 6 a. Define Bias and Variance. What is Bias – Variance Dilemma? (10 Marks)
- b. Discuss how radial basis function can be used for face recognition application. (10 Marks)

Module-4

- 7 a. What is Linear Associative Memory? Explain with necessary equations. (10 Marks)
- b. Discuss in detail, the architecture operation of Hopfield Network. (10 Marks)

OR

- 8 a. Discuss the concept of simulated annealing and basic steps involved in finding optimal configuration of neuron states. (10 Marks)
- b. Compare and contrast Boltzmann Machine and Hopfield Network. (10 Marks)

Module-5

- 9 a. Discuss the application of Hebbian Learning in the context of linear neuron. (10 Marks)
- b. What is Vector quantization? Discuss in detail the concept of adaptive vector quantization. (10 Marks)

OR

- 10 a. Discuss the Operational details of the self organizing feature map algorithm. (10 Marks)
- b. Explain how, SOM can be applied for pattern classification. (10 Marks)

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