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MCA
(SEM IV) THEORY EXAMINATION 2022-23
NEURAL NETWORK

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.**2 x 10 = 20**

- (a) Define Neuromorphic Computing.
- (b) What are the features of neural networks?
- (c) State the Hebbian learning law.
- (d) What are learning laws in neural networks?
- (e) List any two applications of Back Propagation network.
- (f) List the merits of Boltzmann's Machine.
- (g) Define Self-Organization?
- (h) What is recurrent neural network?
- (i) Write down the application of Soft computing.
- (j) What you mean by Hard and Soft computing?

SECTION B

2. Attempt any three of the following:**10 x 3 = 30**

- (a) Exemplify the significance of sigmoid function.
- (b) Explain any three activation functions which are used in single and multilayer networks to calculate the output.
- (c) Discuss the performance of back propagation learning. What are the limitations of back propagation learning? Explain in detail.
- (d) Explain the SOM algorithm.
- (e) What do you mean by Complex valued NN? Discuss.

SECTION C

3. Attempt any one part of the following:**10 x 1 = 10**

- (a) What is learning in ANN? List the important learning strategies in ANN
- (b) Discuss the structure and function of a biological neuron.

4. Attempt any one part of the following:**10 x 1 = 10**

- (a) What is linearly separable problem? Distinguish between linearly separable problem and nonlinearly separable problem.
- (b) Explain Least mean Square algorithm.

5. Attempt any one part of the following:**10 x 1 = 10**

- (a) Distinguish between Radian Basis Function Neural Network and Multi-layer Perceptron Feed-Forward Neural Network
- (b) What do you mean by Back propagation network? How Error is back propagated in a BPN? Discuss.

6. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Explain the Kohonenself-organizing map with diagram. Also discuss the merits and demerits of Kohonenself-organizing feature maps.
- (b) What is Component analysis? Explain the Independent component analysis.

7. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What is hybrid soft computing? Explain any hybrid soft computing technologies.
- (b) Describe the Fuzzy set. Explain the role of fuzzy set in soft computing.

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