

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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