

M. TECH.
(SEM -II) THEORY EXAMINATION 2018-19
NEURAL NETWORKS & FUZZY SYSTEM

Time: 3 Hours**Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 7 = 14**

- a. Explain Gradient Descent Approach.
- b. Explain membership function.
- c. Explain ADALINE Network.
- d. What is recurrent network.
- e. Write application of fuzzy logic.
- f. Differentiate fuzzy and crisp sets.
- g. Explain reinforced learning.

SECTION B**2. Attempt any three of the following:****7 x 3 = 21**

- a. Draw the architecture of radial – basis function network. Also explain its learning algorithm in detail.
- b. What is learning? Explain winner -Take -All Learning.
- c. Define ANN. Describe in detail about different models of ANN.
- d. Explain Hebbian and delta learning rule in detail.
- e. Discuss and explain recent challenges and trends related to NNFL.

SECTION C**3. Attempt any one part of the following:****7 x 1 = 7**

- (a) Discuss the application of artificial neural networks for pattern recognition with a suitable example.
- (b) What is Associative Memory? Explain its various type in detail with suitable example.

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

- (a) What are fuzzy operators? How their resultants differ from crisp operators?
- (b) How back propagation algorithm work? Explain.

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

- (a) In which manner multilayer perceptron models differ from single layer perceptron model? Explain the reasons for emergence of Multilayer Perceptron Model.
- (b) What is fuzzification and defuzzification? Explain the various methods used for defuzzification.

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

- (a) Explain the following terms with respect to membership functions:
 - (i) The Core
 - (ii) The support
 - (iii) Crossover Point
 - (iv) Convex Fuzzy Set
 - (v) Height of a Fuzzy Set

- (b) List distinct types of fuzzy rules. Give examples of each.

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

- (a) Explain Hopfield network in detail.
- (b) Explain neural network? How artificial neural model structure is similar to that of biological neuron.