Printed pages: 2 **Sub Code: MTEE041**

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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.

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