Printed pages: 0 **Sub Code: NEN 013**

Paper Id: 121615 **Roll No:** [redacted]

B.Tech

(SEM VI) THEORY EXAMINATION 2017-18

NEURAL NETWORKS AND FUZZY SYSTEM

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

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

a) What do you understand by Neural Networks?
b) Describe the Nerve structure.
c) What are Learning Rule of Neural network.
d) How are Neural Networks related to machine learning?
e) What are Back propogation networks?
f) Explain the crisp sets.
g) Define learning in Neural Networks.
h) Explain Fuzzy Controller.
i) Explain the L-R Type fuzzy numbers.
j) State the various rules for learning.

SECTION B

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

a) Describe the Artificial Neuron and its model. Explain the working of Auto-associative and Hetro-associative memories.
b) Explain the Linear Max-min composition in fuzzy sets. Describe the Fuzzy Entropy Theorem and describe its applications.
c) Explain the basic concepts of fuzzy logic. Explain the Fuzzy set theory and its applications.
d) Explain the Membership functions in fuzzy logic. Describe the Industrial applications of fuzzy logic.
e) Explain the fuzzy back propagation (BP) algorithm. Also describe the effect of learning rule co-efficient.

SECTION C

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

(a) How do activation functions put affect on artificial neuron? Explain various activation functions.
(b) Explain the architecture of multilayer feed forward neural network with its working. Compare it from recurrent networks.

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

(a) Describe single layer artificial neural network and compare it with the multilayer perception model.
(b) Describe the various methods of back propagation learning. Describe the factors affecting back propagation training.

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

(a) Describe Fuzzy and Crisp relations. Describe the methods for the conversion from Fuzzy to Crisp.

(b) Explain the Fuzzy sets and Systems. How they are different from Crisp sets. Describe the Geometry and Properties of fuzzy sets.

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

(a) Explain the differences between Fuzzyfications & Defuzzificataions. Describe the Fuzzy implications

(b) What are fuzzy if-then rules? Explain various operations and properties of fuzzy sets.

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

(a) Explain the function of fuzzy neutron. Describe the applications of Fuzzy Neural Networks.

(b) Describe the principle of Fuzzy Neural Networks. Describe the architecture of Fuzzy Neural Networks.