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Paper Id: 1 2 0 6 1 6 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 Neuron?
b) Differentiate between Nerve structure and synapse.
c) Define Hebbian Learning Rule of Neural network..
d) How are Neural Networks related to machine learning?
e) Define Back propogation networks.
f) Explain the Architecture of perceptron model.
g) Define learning in Neural Networks.
h) Explain the need for numeric and linguistic processing.
i) Differentiate between supervised and unsupervised learning.
j) Explain the Gradient descent rule for learning.

SECTION B

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

a) Explain the working of multilayer feed forward neural network with its architecture. How it is different from recurrent networks
b) Explain the Linear Seperability in perceptron model. Describe the Fuzzy Entropy Theorem
c) Describe Fuzzy and Crisp relations. Describe the methods for Fuzzy to Crisp conversion.
d) Explain various fuzzy set operations and properties of fuzzy sets.
e) Describe the architecture of Fuzzy Neural Networks. Describe the applications of Fuzzy Neural Networks.

SECTION C

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

(a) Describe the Artificial Neuron and its model. How do activation functions put affect on artificial neuron? Explain various activation functions.
(b) What are various learning techniques used in neural networks? Give the critical information used in the learning process?

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 propogation learning. Describe the factors affecting back propagation training.

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

(a) Explain the basic concepts of fuzzy logic. Describe the Fuzzy set theory and explain its operations.

(b) Differentiate between Fuzzy sets and Crisp sets. Describe the Properties of fuzzy sets.

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

(a) Differentiate between Fuzzyfications & Defuzzificataions. Describe the Center of largest area method of defuzzification.

(b) Explain the Membership functions in fuzzy logic. Describe the Industrial applications of fuzzy logic

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

(a) Explain the L-R Type fuzzy numbers. Explain the function of fuzzy neutron.

(b) Describe the principle of Fuzzy Neural Networks. Explain the fuzzy back propagation (BP) algorithm.