



**PRESIDENCY UNIVERSITY,
BENGALURU**

SCHOOL OF ENGINEERING

TEST 2

Odd Semester: 2018-19

Date: 28 November 2018

Course Code: ECE 401

Time: 1 Hour

Course Name: Artificial Neural Network

Max Marks: 20

Branch & Sem: Open Elective & VII Sem Group - I

Weightage: 20%

Instructions:

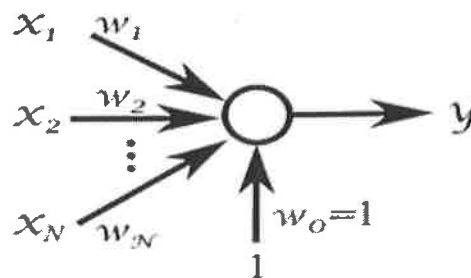
(i) *All parts of the Question paper are compulsory to answer*

Part A

Answer **all** the Questions. **Each** question carries **one** marks.

(1x4=4)

1. Explain learning rate and it's approximate choice in perceptron learning algorithm.
2. Define Function signals and Error signals with respect to multilayer perceptron.
3. Define the basic principle of least –Square algorithm.
4. The neuron shown below has weights w_1, w_2, \dots, w_N and inputs x_1, x_2, \dots, x_N . The output y can be expressed as,



Part B

Answer **all** the Questions. **Each** question carries **four** marks.

(2x4=8)

5. Explain and prove with example
 - a) The perceptron is a linear classifier.
 - b) Also explain a problem which is not linearly separable
6. Discuss the two methods of supervised learning used in multilayer perceptron along with their advantages and limitations.

Part C

Answer the Question. Question carries **eight** marks.

(1x8=8)

6. Using the Perceptron learning rule, Develop a perceptron for AND function with binary input and bipolar targets without bias up to 2 epochs Find the weights required to perform the following pattern classification.

Consider the Training data

Input		Output
1	1	1
1	0	-1
0	1	-1
1	1	-1



Roll No

PRESIDENCY UNIVERSITY
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END TERM FINAL EXAMINATION

Odd Semester: 2018-19

Course Code: ECE 401

Course Name: Artificial Neural Network

Programme & Sem: VII Sem (Open Elective)

Date: 29 December 2018

Time: 2 Hours

Max Marks: 40

Weightage: 40%

Instructions:

- (i) Read the questions carefully.
- (ii) Assume the suitable data if required

Part A

Answer **both** the Questions. **Each** question carries **five** marks. (2Qx5M=10)

1. What are the functions used in back-propagation algorithm? Which quality of these functions make back-propagation algorithm more successful than other algorithm?
2. Prove whether the X-Nor implementation using single neuron is possible or not
If not then, draw a multilayer neuron structure for the same:-

Part B

Answer **both** the Questions. **Each** question carries **eight** marks. (2Qx8M=16)

3. Explain the rules that can be used for unsupervised learning by perusing the self-organizing perspective.
4. Explain how the rate of change of error will help to update weight in back propagation by deriving the expression for error gradient $\frac{\partial \varepsilon(n)}{\partial w_{ji}(n)}$

Part C

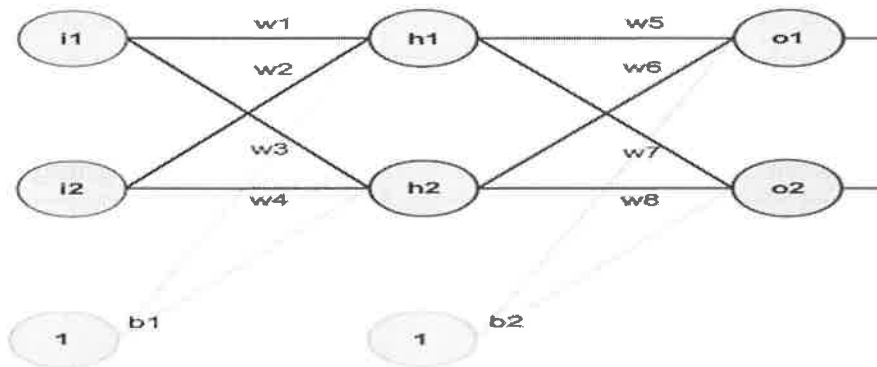
Answer the Question. Question carries **fourteen** marks. (1Qx14M=14)

5. Update the weight W_5 and W_6 using the Back propagation considering Sigmoidal Neuron

For the Given pattern

Input x_1	Input x_2	Target of O_1	Target of O_2
.5	-.5	.9	.1

The Initial Architecture of the network is



Where $w_1 = .1, w_2 = -.2, w_3 = .3, w_4 = .55, w_5 = .37, w_6 = .9, w_7 = -0.22, w_8 = .9$

$b_{hw1} = .01, b_{hw2} = -.02, b_{ow1} = .31, b_{ow2} = .27$