



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

AN AUTONOMOUS INSTITUTION



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

Academic Year 2022-2023 (Even)

Department of Computer Science and Technology.

19TS622-MACHINE LEARNING

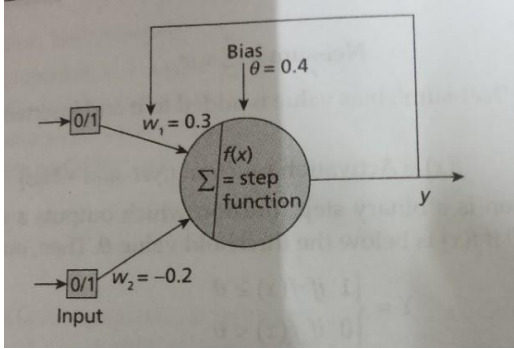
Unit 2

PART – A			
Q.No.	Questions	BT Level	Competence
1	Compare biological neuron and artificial neuron	BTL 5	Evaluating
2	Draw the structure of artificial single neuron based on biological neuron	BTL 3	Applying
3	List out major parts of biological neuron	BTL 1	Remembering
4	Discuss about types of artificial neural networks	BTL 6	Creating
5	What is the drawback of McCulloch & Pitts mathematical model of an artificial neuron?	BTL 1	Remembering
6	Define perceptron	BTL 2	Understanding
7	Draw the simple perceptron model.	BTL 3	Applying
8	Identify the parameters in a perceptron network and its significance	BTL 3	Applying
9	Why XOR problem could not be solved by simple perceptron?	BTL 1	Remembering
10	Define multilayer perceptron	BTL 2	Understanding
11	How a multilayer perceptron solve XOR problem?	BTL 4	Analyzing
12	What are activation function?	BTL 1	Remembering
13	List some linear and nonlinear activation function	BTL 1	Remembering
14	Apply the formula for sigmoidal function	BTL 3	Applying
15	Examine the delta learning rule	BTL 4	Analyzing
16	How to estimate error in the output layer?	BTL 2	Understanding
17	How to evaluate the update weight in back propagation?	BTL 2	Understanding
18	When to use the regression?	BTL 1	Remembering
19	What is dimensionality reduction?	BTL 1	Remembering
20	Justify the necessity for dimensionality reduction in the context of machine learning.	BTL 5	Evaluating

PART – B				
Q.No.	Questions	Marks	BT Level	Competence
1	Explain biological Neuron.	13	BTL 2	Understanding
2	Explain simple model of an Artificial Neuron and its functions.	13	BTL 2	Understanding
3	Construct and explain Artificial Neural network structure.	13	BTL 3	Applying
4	Determine activation function and list few activation function with description.	13	BTL 5	Evaluating
5	Summarize and Explain various types of artificial neural network.	13	BTL 2	Understanding
6	a) Explain application of ANN and list the challenges of ANN. b)list Advantages and disadvantages of ANN.	6 7	BTL 1	Remembering
7	Develop simple perception model and explain learning theory.	13	BTL 3	Applying
8	Analyze the XOR is not linearly separable? Justify how it can be solved.	13	BTL 4	Analyzing
9	List the factors affecting MLP performance and explain each.	13	BTL 1	Remembering
10	What is the importance of MLP? Explain learning in MLP.	13	BTL 1	Remembering
11	a) Compare Linear Vs nonlinear regression. b) Explain back propagation nonlinear regression.	6 7	BTL 4	Analyzing

12	Explain Back propagation network.	13	BTL 2	Understanding
13	Discuss the steps involved in Back propagation algorithm.	13	BTL 6	Creating
14	How dimensionality reduction is important in NN? Justify.	13	BTL 1	Remembering

PART – C

Q.No.	Questions	Marks	BT Level	Competence
1	Design single layer perceptron with two iteration. Consider the perceptron having with the initial weights $w_1=0.5$, $w_2 = 0$, learning rate $\alpha=0.2$ and bias $\theta =0.4$ for AND Boolean function. The activation function is the Step function $f(x)$ which gives the output either 0 or 1. If value of $f(x)$ is greater than or equal to 0, it outputs 1 or else it outputs 0.	15	BTL 6	Creating
2	<p>Consider a perceptron to represent the Boolean function And with the initial weights $w_1=0.3$, $w_2 = -0.2$, learning rate $\alpha=0.2$ and bias $\theta =0.4$ as shown in Figure. The activation function used here is the Step function $f(x)$ which gives the output value as binary i.e., 0 or 1. If value of $f(x)$ is greater than or equal to 0, it outputs 1 or else it outputs 0. Design a perceptron that performs the Boolean function AND & update the weights until the Boolean function gives the desired output</p> 	15	BTL 5	Evaluating
3	Perform a feedforward operation in a Multi-Layer Perception and conclude the result. This given MLP consists of an Input layer, one Hidden layer and an Output layer. The input layer has 4 neurons, the hidden layer has 2 neurons and the output layer has a single neuron and the Learning rate is 0.8 .	15	BTL 5	Evaluating
4.	Design Back propagation using Multi-Layer Perception which has three layers like the input layer has 4 neurons, the hidden layer has 2 neurons and the output layer has a single neuron. Train the MLP by updating the weights and biases in the network. Learning rate: =0.8. Refer Q.no : 3 for the structure of MLP and their weights	15	BTL 6	Creating