QP Code:RD21BTECH325 | Reg. No | | | | | | | | | | | AY 21

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fifth Semester Regular) Examinations, December – 2023

21BCMPE35001 – Artificial Neural Networks

(CSE (AIML))

Time: 3 hrs | Maximum: 70 Marks

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	List out the difference between ANN and BNN.	CO4	K2
b.	Mention the characteristics of problems suitable for ANNs.	CO3	K3
c.	How are ANNs classified on the basis of training imparted to them? Give in detail.	CO1	K3
d.	Compare multilayer perceptron and Radial Basis Function networks.	CO3	K2
e.	Show the structure of Kohonen's SOFM.	CO2	K2

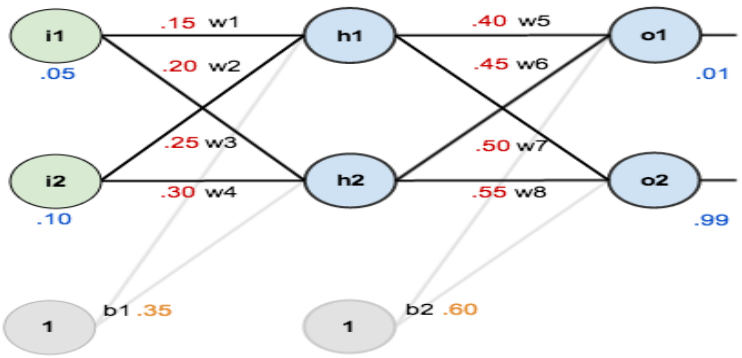
PART – B **(15 x 4 = 60 Marks)**

		Marks	CO #	Blooms Level
	Answer ***ALL*** questions			
2. a.	Explain activation function. Distinguish between binary sigmoid function and bipolar sigmoid functions.	7	CO1	K1
b.	What are Neural Networks? What are the types of Neural networks?	8	CO2	K2
	(OR)			
c.	List the applications of ANN and explain any two in details.	7	CO2	K1
d.	How Artificial Neural Networks can be applied in future?	8	CO2	K2
3.a.	Construct and test the hamming network to cluster four vectors. Given the exemplar vectors e(1)=[1 -1 -1 -1] , e(2)=[-1 -1 -1 1] the bipolar input vectors are x1=[-1 -1 1 -1] , x2=[-1 -1 1 1] , x3=[-1 -1 -1 1] and x4=[1 1 -1 -1].	8	CO3	K2
b.	Draw and explain neural network based OR function?	7	CO2	K1
	(OR)	8		
c.	Design a Hebbian neuron/net to implement the logic 2 input AND function using bipolar input-output pattern?		CO2	K1
d.	Using the linear separability concept, obtain the response for OR function (Takes bipolar inputs and bipolar target)	7	CO3	K2
4.a.	Realize the Ex-OR function by using the McCulloch-Pitts neuron model.	8	CO3	K3

b.	Define the problem of handwritten digit recognition. With suitable diagram, explain architecture of multilayer feed forward network for handwritten character recognition?	7	CO3	K2

(OR)

c.	Calculate the total error of the network after using identity binary and bipolar activation function?	8	CO3	K1



d.	Explain the architecture and algorithm of ADALINE.	7	CO2	K2
5.a.	Construct a kohonen self-organising map (KSOM) to cluster the four given vector [0101], [0001], [0011] and [1000]. The number of clusters to be formed is two. Assume the initial learning rate of 0.4.	8	CO2	K3
b.	Briefly discuss about Hamming Net with example.	7	CO2	K3

(OR)

c.	Consider a Kohonen network with two cluster units and five input units. The weigh vectors for the cluster units are w1 = [0.1, 0.3, 0.5, 0.7, 0.9] and w2 = [0.9, 0.7, 0.5, 0.3, 0.1] Use the square of the Euclidean distance to find the winning cluster unit for the input pattern.	8	CO4	K3
d.	Draw the typical architecture of ART-1 and explain its operation.	7	CO3	K3

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