Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - MAY 2023

Semester : Semester IV - B.Tech CSE - 2021
Course Code : CSE3016
Course Name : Sem IV - CSE3016 - Neural Network and Fuzzy Logic
Program : B.Tech. Computer Science and Engineering

Date : 23-MAY-2023
Time : 10.30 AM - 12.00 PM
Max Marks : 50
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. Explain a Single Layer Recurrent Network in brief.
(CO1) [Knowledge]
2. Explain the dying ReLU problem.
(CO1) [Knowledge]
3. Classify the different types of learning.
(CO1) [Knowledge]
4. State the Tanh activation function.
(CO1) [Knowledge]
5. Mention one advantage and one disadvantage of ReLU function.
(CO1) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(4 X 5 = 20M)**

6. Mention the importance of derivative of an actviation function. Explain with an example how it influences the learning process.
(CO1) [Comprehension]

7. Explain in brief the deficiencies of a Multilayer Perceptron. What is the purpose of a hidden neuron in a multilayer perceptron architecture?

(CO1) [Comprehension]

8. Discuss any three advantages of Neural Network.

(CO1) [Comprehension]

9. Classify the different types of activation functions in neural networks. Briefly explain one activation function.

(CO1,CO2) [Comprehension]

PART C

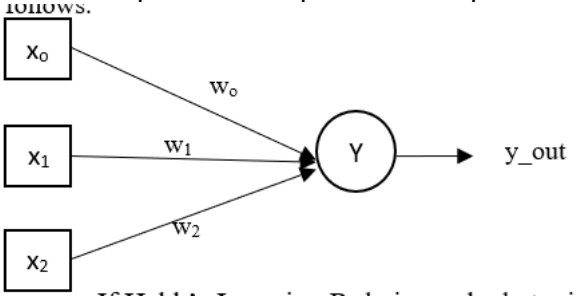
ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

10. 1. Consider the McCulloch-Pitts neural network shown in Fig. All the units, except those at the input level, have the activation function as given below:

What are the responses of the output unit *Z* with respect to various input combinations? We assume the inputs are binary. What logical function the whole network realizes?

(CO1,CO2) [Application]

11. A computer programmer wants to design a simple neural network to realize a two input *AND* function and one output unit. A bias of 0.4 is used. The inputs and outputs are in bipolar form. The structure of the required neural net is as follows.



If Hebb's Learning Rule is used what will be the values of the weights after the completion of a single epoch. Explain the entire process in brief along with a suitable truth table(If the initial weights are taken as 0.2 each and Linear Activation Function is used taking f(x)=kx,k=1).

(CO1,CO2) [Application]