

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. IV Year I Semester Regular & Supplementary Examinations October/November-2025
NEURAL NETWORKS AND FUZZY LOGIC

(Electrical & Electronics Engineering)

Time: 3 Hours**Max. Marks: 60**

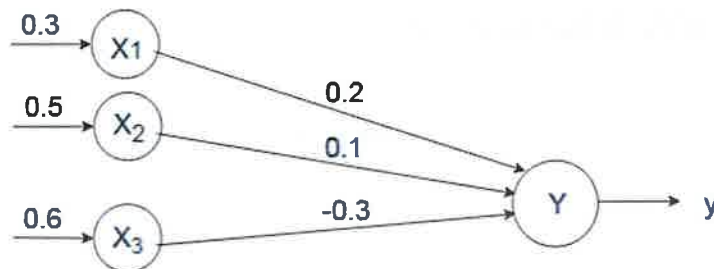
(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a How artificial neuron is inspired from the biological neuron? Explain. CO1 L2 6M
b Explain the basic architecture of McCulloch – Pitts neuron model. CO1 L3 6M

OR

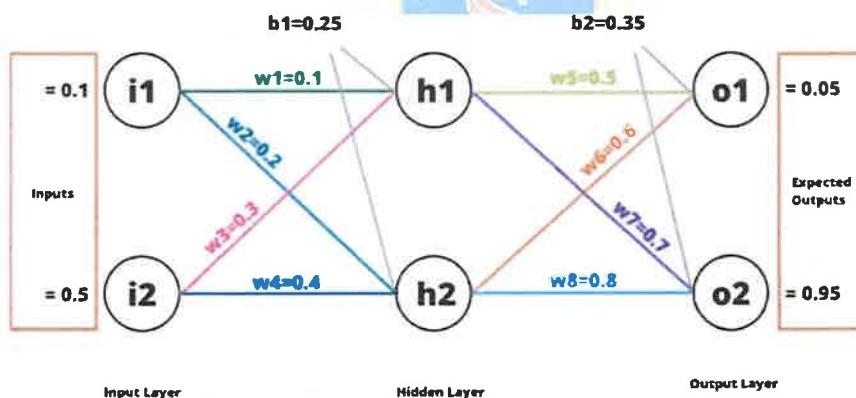
- 2 a For the network shown in figure, calculate the net input to the neuron? CO1 L3 6M



- b How do Neural Networks Work? CO1 L1 6M

UNIT-II

- 3 Find the total error at the output for a given neural network. CO2 L3 12M

**OR**

- 4 a Define Learning factors. Explain the learning factors in propagation Algorithm. CO2 L2 10M
b What is the objective function of gradient descent? CO2 L1 2M

UNIT-III

- 5 a Suppose one has $N=3$ with the pattern pairs given by,
 $A1=[1\ 0\ 0\ 0\ 1]$, $B1=[1\ 1\ 0\ 0\ 0]$
 $A2=[0\ 1\ 1\ 0\ 0]$, $B2=[1\ 0\ 1\ 0\ 0]$
 $A3=[0\ 0\ 1\ 0\ 1]$, $B3=[0\ 1\ 1\ 1\ 0]$, retrieve correct output using input
b Distinguish Auto associative & Hetero associative memories. CO3 L4 8M
CO3 L2 4M

OR

- 6 Explain about types of associative memories along with architecture and algorithm. CO4 L2 12M

UNIT-IV

- 7 a Compare and contrast Fuzzy vs Crisp. CO5 L2 6M
b Determine the union and intersection of the fuzzy sets, where CO5 L3 6M
 $A = \{(1,0.1), (2,0.5), (3, 0.8), (4, 1.0), (5,0.7), (6,0.2)\}$ and
 $B = \{(1,1), (2,0.8), (3,0.4), (4,0.1)\}$.

OR

- 8 a Explain the Features of Membership Functions. CO5 L2 5M
b Give the properties of fuzzy sets. CO5 L2 7M

UNIT-V

- 9 Explain fuzzy inference using Modus ponens and Modus tollens. CO6 L2 12M

OR

- 10 a List out different defuzzification methods available. CO6 L1 6M
b Explain any one of the defuzzification method. CO6 L2 6M

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