GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Computing Science and Engineering

Bachelor of Technology in Computer Science and Engineering
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem V - E2UC507C - Soft Computing

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1) Given two input features (x1 = 1, x2 = 2) and their weights (w1 = 0.4, w2 = 0.6), calculate the weighted sum and apply a step function to determine the output of a single-layer perceptron. K3 (6)

2) Let A and B are two fuzzy sets defined by the following equations K3 (9)

A=.4/x1+.2/x2+.7/x3 +.6/x4
B=.3/x1+.4/x2+.5/x3 +.8/x4

Find (i) Standard Union of A and B.
(3*2)
(ii) Standard Intersection of A and B.
(iii) Complement of AUB(x).

3) Analyze the steps involved in designing a fuzzy logic controller? K4 (8)

4) How do Neural Networks Work? If a neural network has 3 input neurons and 2 output neurons, how many weights would there be in the network? Identify and evaluate some of the challenges and limitations associated with neural networks. K5 (15)

5) Given the membership functions for the linguistic variables "tall" and "short" as follows: K6 (12)

tall = [0.2/5 + 0.3/7 + 0.7/9 + 0.9/11 + 1.0/12]
short = [0.3/0 + 0/30 + 1/60 + 0.5/90 + 0/120]

Develop membership functions for the following linguistic phrases:

(a) "Very tall."
(b) "Fairly tall."
(c) "Not very short."