B.Tech. Sem - V (2020 course) Electronics & communication - winter - 2022

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)

B.Tech.Sem - V Electronics & Communication : WINTER- 2022

SUBJECT : FUZZY LOGIC, NEURAL NETWORKS & GENETIC ALGORITHMS

Day : Wednesday | Time : 02:30 PM-05:30 PM

Date : 14-12-2022 | W-24613-2022 | Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of non programmable **CALCULATOR** is allowed.
4) Assume suitable data if necessary.

Q.1 Let U = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}. Let two fuzzy subsets A and B of U be given by **[10]**

U	0	1	2	3	4	5	6	7	8	9
A (u)	0	0	0.1	0.2	0.3	0.8	0.9	1	1	1

and

U	0	1	2	3	4	5	6	7	8	9
B (u)	1	1	0.9	0.8	0.7	0.5	0.4	0.2	0.2	0

Determine : **i)** A^c **ii)** B|A **iii)** $A \cap B$ **iv)** $A \cup B$ **v)** $A - B$

OR

Q.1 Explain any seven properties of fuzzy sets. **[10]**

Q.2 The survey about best season pair was done among 100 people. The survey table is shown below: **[10]**

	Number of people who preferred			
	Summer	Winter	Spring	Fall
Summer	--	37	49	33
Winter	63	--	90	81
Spring	51	10	--	40
Fall	67	19	60	--

Find Rank and find membership value of each season.

OR

Q.2 What is intuition? Define inference and differentiate between inductive and deductive reasoning. **[10]**

Q.3 Differentiate supervised, unsupervised and reinforcement learning with reference to: **[10]**

i) Definition **ii)** Types of data **iii)** Types of problems
iv) Algorithm **v)** Supervision **vi)** Application

OR

Q.3 **a)** Using McCulloch-Pitts Neuron model, implement X-OR function (consider binary data). **[05]**

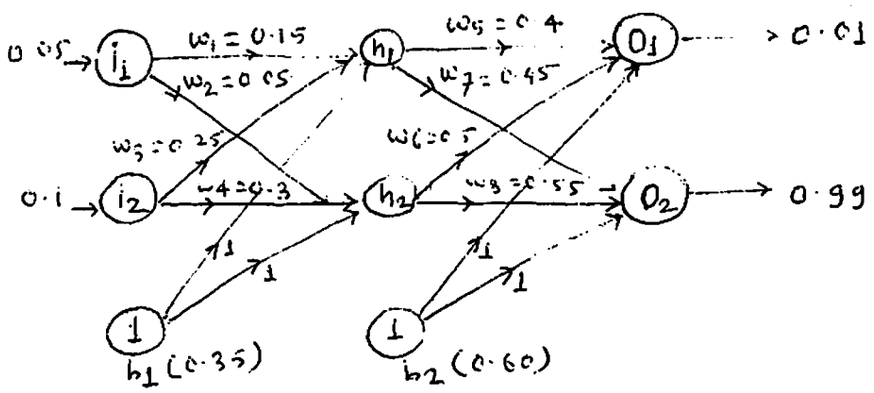
b) Compare Perceptron with McCulloch-Pitts neuron. **[05]**

P.T.O.

Q.4 What is radial basis function network? Explain with detailed architecture. **[10]**

OR

Q.4 Refer the neural network given in the figure. Determine the updated weight W_8 using back propagation algorithm. Consider learning rate $\alpha = 0.4$. **[10]**



Q.5 In a three variable problem the following variable bounds are specified. **[10]**

$-6 < x < 12$

$0.002 \leq y \leq 0.004$

$10^4 \leq z \leq 10^5$

What should be the minimum string length of any point (x, y, z) coded in binary string to achieve 2 significant digit accuracy in solution

OR

Q.5 How Holland Classifier address the problem of credit assignment? **[10]**

Q.6 Explain Neural Nets as Universal approximation. **[10]**

OR

Q.6 Differentiate between Time Series and Recurrent Network. **[10]**

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