Paper / Subject Code: 42454 / Neureal Networks and Fuzzy Logic (DLOC - III)

B.E. (EXTC) (Sem - VII) (CBS) Date - 22/11/19

[Time: 3 Hours] **[Marks: 80]**

Please check whether you have got the right question paper.

N.B:
1. **Q.1** is **Compulsory**.
2. Solve **any three** questions out of remaining.
3. Draw neat labelled **diagram** whenever **necessary**.
4. Assume suitable data if necessary.

1. Answer **any four** questions from the given questions.

a) Describe advantages of Fuzzy logic over crisp logic. **04**

b) Compare RBFNN with FFNN **04**

c) What is role of function in NN. State the types of activation functions **04**

d) Find (i) $A \cap B$ (ii) $\bar{A} \cup B$ (iii) $A \cap \bar{B}$ (iv) $A \cup B$ for the given fuzzy sets. **04**

$$\underset{\sim}{A} = \left\{\frac{0.4}{a} + \frac{0.2}{b} + \frac{0.9}{c}\right\} \text{ and } \underset{\sim}{B} = \left\{\frac{0.1}{a} + \frac{0.5}{b} + \frac{0.8}{c}\right\}$$

e) Explain LMS algorithm. **04**

2. a) What is a use of membership function? Explain the different methods by which it is designed. Describe any two fuzzy membership functions with diagram and mathematical equations. **10**

b) Explain perception learning algorithm and developed perception network to implement two inputs AND gate to function. Consider inputs and outputs as Unipolar. Assume initial weight and bias value equal to zero. Consider learning rate equal to one. **10**

3. a) Explain any Five methods of defuzzification in details. **10**

b) Describe Delta Learning rule with diagram and equations. **10**

4. a) Explain Supervised Learning in detail with diagram and its applications. Compare Supervised and Unsupervised Learning. **10**

b) Explain Fuzzy image contrast enhancement using INT operator with the help of 4×4 pixel array. **10**

5. a) A Hopfield network has to store the following pattern **10**
$P1 = [1\ 1\ 1\ 1\ 1]^I$, $P2\ [-1\ -1\ -1\ -1\ -1]^T$ and $P3 = [1\ -1\ -1\ 1\ 1]^T$
Evaluate the weight matrix for it.

b) Describe the application of Neural Network for handwritten character recognition. **10**

6. a) Design a fuzzy control system for washing machine by using triangular membership, five rules, mamdani inference and centroid as defuzzification method to obtain the output. **10**

b) Explain in detail Error back propagation algorithm with block diagram and equations. **10**

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Correction in 1T01027 - B.E.(Electronic & Telecommunication Engineering)(SEM-VII)(Choice Base) / 42454 - Neureal Networks and Fuzzy Logic (DLOC - III)

1 message

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In Question 1 : **05 marks** are for each sub question a) to e)