

**Reg. No:**

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

**B.Tech IV Year I Semester Regular Examinations February-2022**

**NEURAL NETWORKS AND FUZZY LOGIC**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

**PART-A**

(Answer all the Questions 5 x 2 = 10 Marks)

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|-----|--|----|----|
| 1 a | Mention the basic parts of Biological Neuron.                          | L1 | 2M |
| b   | Generally which activation function is used in input layer of the ANN. | L1 | 2M |
| c   | Define associative memory.   | L1 | 2M |
| d   | Define fuzzy set.  | L1 | 2M |
| e   | Give three defuzzification methods.                                    | L1 | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- |     |   |    |    |
|-----|---|----|----|
| 2 a | Explain organization of human brain           | L1 | 5M |
| b   | Discuss the functioning of biological neuron. | L2 | 5M |

**OR**

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|-----|---|----|----|
| 3 a | How artificial neuron is inspired from the biological neuron? Explain.  | L2 | 5M |
| b   | Explain the basic architecture of McCulloch – Pitts neuron model and realize 3-input NAND gate using McCulloch – Pitts model. | L3 | 5M |

**UNIT-II**

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|---|---|----|-----|
| 4 | Explain supervised learning in detail with block diagram. | L2 | 10M |
|---|---|----|-----|

**OR**

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|---|--|----|-----|
| 5 | Give the perceptron weight-updating rule and the learning algorithm. | L3 | 10M |
|---|--|----|-----|

**UNIT-III**

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|---|--|----|-----|
| 6 | What is associative memory? Explain briefly. | L2 | 10M |
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**OR**

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| 7 | Briefly explain the working principle of hetero correlators. | L2 | 10M |
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**UNIT-IV**

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|---|--------------------------------------|----|-----|
| 8 | Compare and contrast Fuzzy vs Crisp. | L2 | 10M |
|---|--------------------------------------|----|-----|

**OR**

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|-----|--|----|----|
| 9 a | Consider set $X = \{2, 4, 6, 8, 10\}$ then find its power set, cardinality and cardinality of power set. | L3 | 5M |
| b   | Explain the operations and properties over a fuzzy relation.   | L2 | 5M |

**UNIT-V**

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|----|--|----|-----|
| 10 | Explain the process of fuzzification in fuzzy logic. | L3 | 10M |
|----|--|----|-----|

**OR**

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|----|---|----|-----|
| 11 | Explain fuzzy inference using Modus ponens and Modus tollens. | L2 | 10M |
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\*\*\*END\*\*\*