

**III B. Tech II Semester Supplementary Examinations, November - 2019**  
**NEURAL NETWORKS AND FUZZY LOGIC**  
 (Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**
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**PART -A****(14 Marks)**

1. a) Explain why neural network exhibit fault tolerance? [2M]
- b) What is meant by supervised learning? [2M]
- c) Explain architecture of Hopfield network. [3M]
- d) Explain the Cartesian product in crisp relations. [3M]
- e) What do you mean by fuzzification? [2M]
- f) Explain the concept of load forecasting. [2M]

**PART -B****(56 Marks)**

2. a) Write key developments of artificial neural networks. [7M]
- b) Implement the Mc-Culloch pitts networks for XOR logic function. [7M]
3. a) What is ANN topology? Draw and explain the ANN architecture. [7M]
- b) Classify the Taxonomy of ANN? Explain. [7M]
4. a) Discuss about the Kohonen self organizing feature map. [7M]
- b) Comparison between discrete and continuous Hopfield network. [7M]
5. a) Illustrate the basic fuzzy set operations with examples. [7M]
- b) Let X, Y, Z are three fuzzy sets defined on the universe of discourse  $X = \{x_1, x_2, x_3\}$ ,  $Y = \{y_1, y_2\}$  and  $Z = \{z_1, z_2, z_3\}$  respectively. Fuzzy relation  $\bar{R} = \begin{bmatrix} 0.5 & 0.1 \\ 0.2 & 0.9 \\ 0.8 & 0.6 \end{bmatrix}$  and  $\bar{S} = \begin{bmatrix} 0.6 & 0.4 & 0.7 \\ 0.5 & 0.8 & 0.9 \end{bmatrix}$ . Find the max-min composition. [7M]
6. a) Discuss the following (i) Knowledge base (ii) Rule base (iii) Defuzzification module (iv) Fuzzy Inference. [7M]
- b) Discuss the different types of defuzzification methods. Express them mathematically. [7M]
7. What do you mean by process identification? Explain the process identification by using neural network with neat sketch? [14M]

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