M.Tech. (ECE)   (Sem. – 1)

FUZZY LOGIC & SYSTEMS

Subject Code: MTEC-PE2Y-18-4

M Code: 75180

Date of Examination : 25-01-2023

Time: 3 Hrs.   **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:
1.   **Attempt any FIVE questions out of EIGHT questions.**
2.   **Each question carries TWELVE marks.**

1. What is the importance of Mamdani inference model? Explain the steps involved in Mamdani inference scheme in detail with suitable example.

2. a)   Describe winner-take-all learning rule and outstar learning rule.

   b)   What is the need of Self Organizing feature Map neural network? Explain it with an example.

3. a)   What are the various defuzzification techniques? Explain any two of them in detail with suitable example.

   b)   Differentiate feed forward and recurrent network with suitable examples.

4. What is the role of reinforcement learning in neural network? Draw and explain the steps involved in reinforcement learning algorithm to train a neural network with neat flow diagram.

5. What is back propagation algorithm? Explain the steps involved in back propagation algorithm to train a multilayer perceptron network.

6. What is the significance of hybrid soft computing technique?Explain the function of genetic-neuro hybrid system with a neat diagram.

7. Explain fuzzy rule based system design and relate it with any real life example. Demonstrate the Sugeno fuzzy inference system design using above rules?

8. Define the terms chromosome, fitness function, crossover and mutation as used in genetic algorithms. Explain how genetic algorithms work.