

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3172009****Date:10/06/2022****Subject Name:Soft Computing****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Compare Soft Computing and Hard Computing. **03**
 (b) With a suitable diagram explain the law of Excluded Middle and the law of Contradiction. **04**
 (c) Explain any one genetic algorithm-based application of soft computing. **07**
- Q.2** (a) Compare Artificial intelligence and human intelligence. **03**
 (b) What is the activation function? Explain the different types of activation functions used in ANN's. **04**
 (c) Explain any one fuzzy logic-based application of soft computing. **07**
 OR
 (c) Explain any one neural network-based application of soft computing. **07**
- Q.3** (a) Compare the Radial basis function network with a feed-forward neural network. **03**
 (b) Define reflexive and irreflexive properties of a fuzzy relation. **04**
 (c) Explain techniques of Supervised Learning Network. **07**
 OR
- Q.3** (a) Compare Fuzzy Logic and Crisp Logic. **03**
 (b) State the merits and demerits of Kohonen Self-organizing feature maps. **04**
 (c) Explain techniques of Unsupervised Learning Network. **07**
- Q.4** (a) Compare Biological neurons vs artificial neural networks. **03**
 (b) Explain genetic algorithm operator: Encoding. **04**
 (c) Write a short note on the Learning Vector Quantization network. **07**
 OR
- Q.4** (a) Compare Mamdani & Sugeno Fuzzy interface systems. **03**
 (b) Explain genetic algorithm operator: Cross over. **04**
 (c) Explain the basic membership functions of fuzzy sets with a suitable example. **07**
- Q.5** (a) Compare McCulloch-Pitts Neuron Model and Perceptron Model. **03**
 (b) Explain genetic algorithm operator: Selection. **04**
 (c) Realize the Mc-Culloch-Pitts neuron model for AND gate (take binary data). **07**
 OR
- Q.5** (a) Compare Hebb network and Perceptron Model. **03**
 (b) Explain genetic algorithm operator: Mutation. **04**
 (c) Define defuzzification. Explain and compare the first of maxima and last of maxima method. **07**
