

Indian Institute of Engineering Science and Technology, Shibpur

Department of Computer Science & Technology

M.Tech (CST) 1st Semester Mid-Term Examination, Oct. 2022

Subject: Soft Computing-Open Elective

Code: CS5161

Full Marks: 30

Time: 2 hr

Answer question No. 1 and any two from the rest

1. Fuzzy sets = {slow, average, fast}

Consider universe of discourse $U = \{40 \text{ km/hr}, 60 \text{ km/hr}, 70 \text{ km/hr}, 80 \text{ km/hr}, \dots\}$ representing speed of different cars.

(a) Suppose, the speed of a car is observed as 55 km/hr. Calculate degree of membership of the car for each of the fuzzy sets. 5

(b) Explain the role of activation function in backpropagation algorithm. 5

2. Why output of Ex-OR gate is not classified using single layer perceptron NN model? How we can overcome the problem using Multilayer perceptron? 4+6

3. Define Generalized Modus ponens and tollens and its application in fuzzy approximate reasoning. 4+6

4. Describe the basic architecture of a 3-layer Radial Basis Function NN. 10