

ALCCS

Time: 3 Hours

FEBRUARY 2014

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:

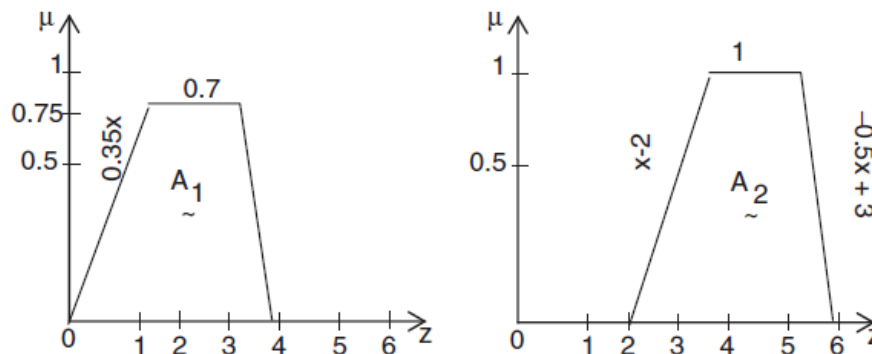
- Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.
- Parts of a question should be answered at the same place.

- Q.1**
- Define Union, Intersection and complement operations of Fuzzy sets.
 - Write Advantages of Sugeno and Mamdani methods.
 - Discuss common applications of Artificial Neural Network (ANN)
 - What is Attribute dependency in rough sets?
 - Describe Ant Colony Algorithms.
 - Explain Random and Tournament Selection methods of Genetic Algorithm.
 - Explain Particle Swarm Optimization (PSO). (7×4)

- Q.2**
- Consider we have three fuzzy sets, given by

$$\tilde{A} = \left\{ \frac{1}{3} + \frac{0.8}{7} \right\}, \quad \tilde{B} = \left\{ \frac{0.6}{4} + \frac{1.0}{6} \right\}, \quad \tilde{C} = \left\{ \frac{0.8}{2} + \frac{1}{4} + \frac{0.4}{8} \right\}.$$
 Make suitable decisions based on fuzzy ordering. (9)

- For the given membership function as shown in Figure below. Determines the defuzzified output value by any Four methods. (9)



- Q.3** a. Describe Classification of Fuzzy Sets. (6)
- b. Explain Mutation process of Genetic Algorithm. (6)
- c. Discuss Crossover techniques of Genetic Algorithm. (6)
- Q.4** a. Define Radial Basis Function Networks. Explain the architecture and learning methods of RBFN? (9)
- b. Explain the procedure of Roulette Wheel Selection method. (9)
- Q.5** a. Compare feed-forward and back-forward neural network. (9)
- b. What is the weight adjustment with sigmoid activation function? (9)
- Q.6** a. Write classification of Hybrid function. (9)
- b. What is Edge Selection and Pheromone update in the ant colony optimization algorithm. (9)
- Q.7** a. Define Rough set and write it's applications. (6)
- b. Describe Neuro-Fuzzy Hybrid System and Neuro-Genetic Hybrid and System. (6)
- c. Write applications of Ant colony optimization algorithms. (6)