46297

BT–6/M–23

SOFT COMPUTING

Paper–PC–CS–AIDS–310A

Time : 3 Hours]   [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each unit. All questions carry equal marks.

UNIT–I

1. (a) Classify the various types of soft computing techniques.
   (5)

   (b) What do you understand by soft computing? Explain its characteristics. (5)

   (c) Discuss major areas of soft computing. (5)

2. (a) Compare soft computing vs. hard computing. (7)

   (b) Explain the architecture of biological neuron. (8)

UNIT–II

3. (a) Explain the architecture of back-propagation neural network. Also explain their training algorithm. (8)

(b) Discuss in detail the various types of activation function used in neural network with aid of mathematical representation and its output. (7)

4. (a) Determine the weights of a single layer perceptron for implementing the AND function. Consider the inputs and targets to be bipolar and $\alpha = 1$. (8)

(b) Explain the training algorithm of Kohonen self organizing feature maps and with a neat diagram. (7)

UNIT–III

5. (a) Consider Two Fuzzy sets $A1 = 0.2/x1 + 0.9/x2$ and $A2 = 0.3/y1 + 0.5y2 + 1/y3$. Find the algebraic sum, algebraic product, bounded sum & bounded difference. (8)

(b) Name and explain different Fuzzy Membership Functions with a diagram. (7)

6. (a) Briefly discuss about following :

(i) Measure of Fuzziness.

(ii) Fuzzy Integral. (8)

(b) What is fuzzy logic? How is it different from binary logic? Discuss applications of fuzzy logic. (7)

UNIT–IV

7. (a) Mention four criteria, which you should consider to judge the efficiency of a selection strategy? (8)

(b) Summarize the sequential procedures involved in the cross over and reproduction phase of GA with typical examples. (7)

8. (a) What do you understand by Fitness function? Mention the importance of Fitness function in genetic algorithm. How can Fitness functions be found for any optimization problem? (8)

(b) Compare and Contrast traditional algorithm and Genetic algorithm. (7)

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