Roll No ....

MCSE-205

M.E./M.Tech., II Semester

Examination, December 2015

Soft Computing

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain what is meant by soft computing. Differentiate between soft computing and hard computing. Explain various soft computing techniques. 7

    b) A single layer neural network is to have six input and two outputs the output is to be limited to and continuous over the range O to I specify the following : 7

        i) How many neurons are required?

        ii) What are the dimensions of the weight matrix?

        iii) What kind of transfer functions could be used?

2. a) Explain Depth-first search technique along with its algorithm. What are the advantages and drawback of depth-first search? 7

b) With suitable diagram derive the weight update equations in back propagation algorithm for a multilayer feed forward neural network and explain the effect of learning rate, and momentum terms or weight update equations. 7

3. a) What are crisp relations? How are they different from fuzzy relation? Explain various properties of crisp relation and fuzzy relation. 7

   b) What is Adaline? Draw the model of an Adaline network. 7

4. a) What is Fuzzy reasoning and compositional rule of inference? Explain with example. 7

   b) What are the parameters to be considered for the design of membership function? 7

5. Differentiate between the following : 14

   a) Simple Hill Climbing and Simulated annealing Hill Climbing

   b) A* and AO*

6. a) Explain the various operators involved in genetic algorithm. 7

   b) Consider the fuzzy sets : 7

   A = {1/low + 0.2/medium + 0.5/high}

   B = {0.9/positive + 0.4/zero + 0.9/negative}

   C = {0.1/low + 0.2/medium + 0.7/high}

   i) Find the fuzzy relation R for the Cartesian product A and B.

   ii) Find CoR using max-min composition.

   iii) Find the fuzzy relation S between C and B using Cartesian product.

7. a) What do you understand by regression tree in Neuro-Fuzzy modeling? How does it differ from the classification tree? 7

   b) Explain the classes of parameterization function commonly used to define membership functions of one and two dimension. 7

8. Write short note on following : 14

   a) Delta Learning Rule

   b) Cross Over Mutation

   c) Data Clustering Algorithm

   d) Fuzzy Associative Memory

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