2072
M.E. (Information Technology)
Second Semester
MEIT-2103: Advanced Soft Computing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Differentiate between supervised and unsupervised learning.

b) Define Defuzzification.

c) Explain the concept of linear seperability.

d) Partial membership is allowed in fuzzy sets. Justify this statement.

e) What is the difference between auto associative and hetero associative memory networks? (5x2)

UNIT - I

II. a) Differentiate between classification and clustering with suitable example.

b) Describe the role of activation function in training a neural network. Explain different activation functions. (2x5)

III. Suppose you train a one layer neural network with the perceptron learning rule. The network has 3 inputs and two outputs. At one point in the training the weight matrix has the following content (the first column contains the bias values):

0.5   -1.0   -1.0   -1.0

1.0   0.5   0.5   0.5

How is the weight matrix changed when it is trained with pattern [0.1, 0.2, 0.3] and wanted answer [1,1]. Use a step length of 0.1. Use a transfer function with output 1 if sum>=0, -1 otherwise. Show your calculations and what the symbols stand for and what the different steps do? (10)

P.T.O.

IV. Draw and explain the architecture of Adaptive Resonance Theory? How ART1 differs from ART2. (10)

UNIT - II

V. Consider two fuzzy sets A and B

A= {0.2/2 + 0.5/4 + 0.3/6 + 0.8/8 + 0.1/10}

B={ 1/2+0.2/4+0.4/6+0.5/8+0.2/10}

Find their union, intersection, difference. Also find core and support of fuzzy set A and B. (10)

VI. Write short notes on the following:-

a) Fuzzy Control Systems

b) Neuro-fuzzy hybrid systems (2x5)

VII. How selection of candidates for mating pool will affect the convergence of Genetic algorithm? What are the different operators required in Genetic algorithm? (10)

x-x-x