Exam.Code:0926
Sub. Code: 6880

1059

B.E. (Information Technology)
Eighth Semester
Elective – III
ITE-845: 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) What are the issues on which biological networks prove to be superior to Al networks?

b) What is the objective of back propagation algorithm?

c) What is fuzzy expert system?

d) What is synchronous update in hopfield model?

e) Explain the role of bias in activation function.

f) In which networks "winner" node concept is used?

g) Define supervised training.

h) What is generalized delta rule?

i) What is a Kohonen's network?

j) Draw the block diagram of an artificial neuron. (10x1)

UNIT – I

II. a) State and explain BAM energy function.

b) Define and explain energy (Lyapunov) function of Hopfield Neural Network. (5,5)

III. a) Explain the limitations of back propagation learning. Also explain the scope to overcome these limitations.

b) What are classical and Fuzzy sets? List the operation on classical and fuzzy sets. (5,5)

IV. Find final weights of a single layer network after three steps ofHebbian learning with bipolar binary neuron used having initial weight vector w = [3 -1 0.5] needs to be trained using the set of three input vectors as below for an arbitrary choice of learning constant = 1. The transposed inputs are :

X1 = [2 -2 1.5] X2 = [1 -0.5 -2] X3 = [0 2 -2] (10)

P.T.O.

UNIT – II

V. a) Discuss how to leverage uncertain information from deep neural networks for disease detection.

b) Show that the inference rule $[(A \rightarrow B) \wedge (B \rightarrow C)] \rightarrow (A \rightarrow C)$ is a quasi-tautology for fuzzy sets. (5,5)

VI. a) Design a neuro fuzzy controller from fundamentals, for a system of your choice, with the help of diagram representing various FLC blocks membership functions, rule base matrix flow chart. (5,5)

b) Explain different defuzzification methods such as center of area, center of maxima and mean of maxima methods. (5,5)

VII. a) Explain intelligent solution for "Pattern Recognition for finger prints" using Fuzzy logic.

b) Discuss the role of Selection, Cross over and Mutation in context of Genetic algorithm. (5,5)

x-x-x