ROLL NO. _____

Code: CT79 **Subject: SOFT COMPUTING**

ALCCS

Time: 3 Hours **JUNE 2016** **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 a. What are the conditions to terminate the run for any soft computing technique?

b. Why Gray code representation worked slightly better than the binary representation in GA?

c. Explain the parameter selection of Binary Genetic Algorithm.

d. Write a short note on Tournament selection strategy in GA.

e. What are the different components of soft computing? What is Genetic algorithm?

f. Explain the importance of soft computing to solve any real world problem.

g. What are the different activation functions used in Neural Network? **(4×7)**

Q.2 a. Explain Learning schemes in Neural Network. **(6)**

b. Fig 1 shows a Neural Network, Having input [0 1] with target [1 0]. **(12)**
All biases set to 1, Learning rate = 0.1 and use identity activation function (i,e. g(a) = a). Find out the exact output of the NN using back propagation learning, for one iteration.

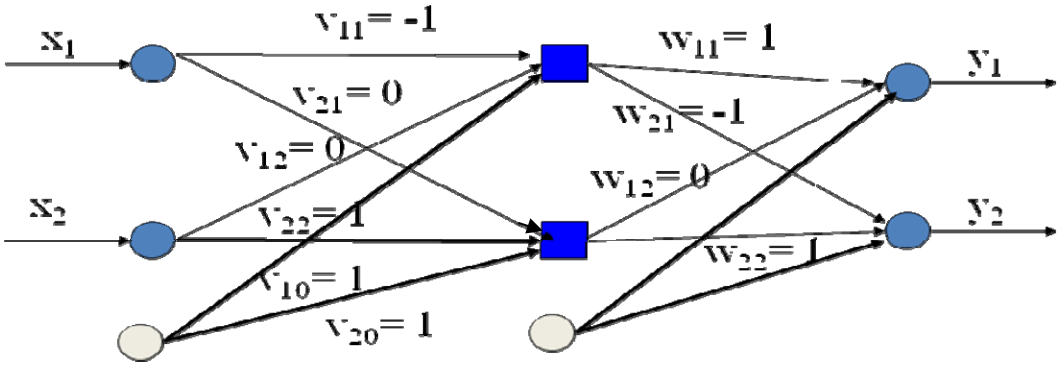

Fig 1

Q.3 a. Explain the operation of PSO to improve the solution quality of a given problem, with the help of necessary flowchart. **(12)**

b. Differentiate between classical Set and Fuzzy set. **(6)**

Q.4 a. What is defuzzification process? **(2)**

b. Give 5 types of defuzzification techniques. **(10)**

c. Explain Mamdani Fuzzy model and Sugeno Fuzzy model. **(6)**

Q.5 a. Draw the architecture of 3-3-2 multilayer feed forward perceptron. Explain its working in brief. **(4)**

b. Explain in detail Radial Basis Function networks. Also discuss the types of basis functions along with diagrams. **(10)**

c. Explain in brief about Kohonen Self-organizing maps. **(4)**

Q.6 a. Draw the architecture for ANFIS. Explain in detail its working. **(8)**

b. Explain with example in detail how Fuzzy logic and Genetic algorithms can be used together for optimization with respect to Game playing. **(10)**

Q.7 a. What are Rough Sets? How do they help in imprecise categories approximations? **(5)**

b. Write down the steps followed to do attribute reduction using Rough Sets. **(5)**

b. List any two application areas of Rough Sets in detail. **(8)**