

Roll No

CS-8001 (CBGS)**B.E. VIII Semester**

Examination, May 2019

Choice Based Grading System (CBGS)**Soft Computing***Time : Three Hours**Maximum Marks : 70*

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

1. a) Explain with example how to define a problem as a state space search? 7
- b) Define soft computing? Distinguish between soft computing and hard computing? 7
2. a) What is learning in Neural Network? Differentiate between supervised learning and unsupervised learning. 7
- b) Illustrate the different steps involved in the training algorithm of perceptron? 7
3. a) Explain error back propagation training algorithm with the help of flowchart? 7
- b) What is self organizing map and discuss the algorithm and features of Kohonen's map? 7
4. a) With a neat sketch explain the operation (Training and Testing) of Recurrent Neural Network? 7
- b) Explain different types of defuzzification with suitable example. 7

5. Draw the architecture of Hopfield Network? Design Hopfield net for 4 bit bipolar pattern. The training patterns are: 14
I sample S_1 (1, 1, -1, -1)
II sample S_2 (-1, 1, -1, 1)
III sample S_3 (-1, -1, -1, 1) find the weight matrix and energy for 3 input samples.
6. a) With help of necessary block diagrams, compare Mamdani and sugeno fuzzy inference systems. 7
- b) With help of examples, explain the various crossover techniques employed in genetic algorithm. 7
7. a) Write down the application area of Genetic Algorithm. 7
- b) "Termination criterion of a genetic algorithm brings the search to a halt". Explain various termination techniques. 7
8. a) Discuss linear and nonlinear SVM classifier? 7
- b) Write short notes-(Any Two) 7
 - i) Ant colony optimization
 - ii) Bee colony optimization
 - iii) Swarm intelligence
