ROILIND.						

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M.Tech. (CSE Engg.) (PT) (2015 to 2017) (Sem.-2,3,4)

SOFT COMPUTING Subject Code : MTCS-202 M.Code : 72886

Time : 3 Hrs. INSTRUCTIONS TO CANDIDATES : Max. Marks : 100

- 1. Attempt any FIVE questions out of EIGHT questions.
- 2. Each question carries TWENTY marks.
- 1. a) For the following Rule Set, draw the ANFIS Architecture. Explain the function performed in each layer.

Rule 1: If x is A1 and y is B1, then f1=p1x+q1y+r1;

Rule 2: If x is A2 and y is B2, then f2=p2x+q2y+r2;

- b) What is soft computing? Explain the main components of soft computing paradigm.
- 2. a) Explain perceptron learning for pattern classification with example.
  - b) Explain with architecture the training algorithm used in Kohonenself organizing feature map.
- 3. a) Explain the architecture of feedback neural network with its applications.

b) Describe strong -cut of a fuzzy set with suitable examples.

- a) For the two fuzzy sets A and B, given below, compute: (i) A□B (ii) A□B and (iii) A□A A = {0.1/0, 0.2/1, 0.4/2, 0.6/3, 1.0/4}, B = {1.0/0, 0.5/1, 0.7/2, 0.3/3, 0/4}.
  b) Considering a configuration of L-input neurons, m-hidden neurons, and n-output neurons, draw the architecture of Fuzzy Back Propagation System and discuss the computations carried out by each layer.
- 5. A budget airline company operates 3 plains and employs 5 cabin crews. Only one crew can operate on any plain on a single day, and each crew cannot work for more than two days in a row. The company uses all planes everyday. A Genetic Algorithm is used to work out the best combination of crews on any particular day.
  - a) Suggest what chromosome could represent an individual in this algorithm?
  - b) Suggest what could be the alphabet of this algorithm? What is its size?
  - c) Suggest a fitness function for this problem.
  - d) How many solutions are in this problem? Is it necessary to use Genetic Algorithms for solving it? What if the company operated more plains and employed more crews?

- 6. a) How Fuzzy Filtered Neural Network works? Draw and explain the architecture of Fuzzy Filtered neural network.
  - b) Discuss supervised and unsupervised learning techniques with suitable example.
- 7. a) How could you cope with division by zero in a program being evolved by a genetic programming approach?
  - b) Show, in pseudo code, a simple genetic algorithm with a brief description of each of the main elements.
- 8. Write short notes on the following :
  - a) Hopfield networks
  - b) Approximate reasoning
  - c) GA and search space
  - d) Genetic-Neuro systems

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.