Code No. 3248

FACULTY OF INFORMATICS

B.E. 4/4 (IT) II-Semester **(Main)** Examination, May 2011

Subject : **Soft Computing**
(Elective-V)

Time : 3 Hours Max. Marks: 75

Note: Answer **all** questions of Part - A and answer any **five** questions from Part-B.

PART – A (25 Marks)

1. List any four applications of Neural Networks. (2)
2. Define Bipolar Sigmoid Activation function. (3)
3. State the activation function of Mexicanhat network. (3)
4. Write about the parameters on which the Gaussian machine is based. (3)
5. What ate the operations that can be performed on fuzzy sets? (3)
6. What is meant by Inference? (3)
7. What are the properties of λ-cut sets? (2)
8. Mention the two major functions of fuzzy expert systems. (2)
9. When is multi attribute Decision making appropriate? (2)
10. Give the applications of Genetic Algorithms. (2)

PART – B (5x10=50 Marks)

11.(a) Define learning. Explain about the three categories of learning in Artificial Neural Network. (7)

(b) Draw the model of original perceptron Network. (3)

12. Train a hetero associatives memory network using Hebb rule to store input row vector $S = (S_1, S_2, S_3, S_4)$ to output row vectors $t = (t_1, t_2)$. The Vector pairs are gives as

Input Target	S_1	S_2	S_3	S_4	t_1,	t_2
1^{st}	1	0	1	0	1	0
2^{nd}	1	0	0	1	1	0
3^{rd}	1	1	0	0	0	1
4^{th}	0	0	1	1	0	1

13. Consider 2 given fuzzy sets

$$\underset{\sim}{A} = \left\{\frac{1}{2} + \frac{0.3}{4} + \frac{0.5}{6} + \frac{0.2}{8}\right\} \quad \underset{\sim}{B} = \left\{\frac{0.5}{2} + \frac{0.4}{4} + \frac{0.1}{6} + \frac{1}{8}\right\}$$

Perform (a) $\underset{\sim}{A} \cup \underset{\sim}{B}$ (b) $\underset{\sim}{A} \cap \underset{\sim}{B}$ (c) $\overline{\underset{\sim}{A}}$ (d) $\underset{\sim}{A} \mid \underset{\sim}{B}$

(e) $\overline{\underset{\sim}{A} \cup \underset{\sim}{B}}$ (f) $\overline{\underset{\sim}{A} \cap \underset{\sim}{B}}$ (g) $\underset{\sim}{A} \cap \overline{\underset{\sim}{B}}$ (h) $\underset{\sim}{A} \cup \overline{\underset{\sim}{B}}$

(i) $\overline{\underset{\sim}{A}} \cap \underset{\sim}{B}$ (j) $\overline{\underset{\sim}{B}}$

14.(a) Using block diagram explain the working principle of Fuzzy Inference System. (5)

(b) Write about Mamdani FIS. (5)

15. Discuss about the architecture and operation of Fuzzy logic controller system.

16. Explain in detail about Auto Associative memory network.

17. Write about the following :
(a) Traditional algorithm Vs Genetic algorithm
(b) Measures of fuzziness

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