B.E.-Information Technology Sem VIII

IT802 - Soft Computing Techniques

P. Pages : 2 **GUG/S/18/7092**

Time : Three Hours * 2 1 9 3 * Max. Marks : 80

Notes : 1. Same Answer book must be used for all question.
2. All questions carry marks as indicated.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.

1. a) Describe the evolution and history of soft computing. **8**

b) Write about different techniques in soft computing. **8**

OR

2. a) Explain different applications of soft computing techniques. **8**

b) What is machine learning? Explain main categories of machine learning. **8**

3. a) What is Genetic algorithm? Explain different terminologies of GA. **8**

b) Explain different operation in GA. Give examples. **8**

OR

4. a) Write applications of genetic algorithm. **6**

b) Write the steps involved in GA. Also explain its flowchart. **10**

5. a) Explain feedforward and feedback networks in Neural N/w. **8**

b) Explain supervised and unsupervised learning in NN. Give example. **8**

OR

6. a) Draw and explain mathematical model of artificial neural network. **8**

b) Explain single layer and multi layer architecture in ANN. Explain terms related to it. **8**

7. a) Define crisp sets & fuzzy sets. Differentiate between the two. **8**

b) Write different operation on fuzzy sets. **8**

OR

8. a) Explain different fuzzy membership functions with example. **8**

b) Given two fuzzy sets. **8**

$x = \{(x_1, 0.3), (x_2, 0.4), (x_3, 0.5), (x_4, 0.6)\}$

$y = \{(x_1, 0.7), (x_2, 0.5), (x_3, 0.2), (x_4, 0.8)\}$

Find the following

i) $x \cap y$ ii) $\bar{x} \cup y$

iii) $\bar{y}$ iv) x / y

v) $\overline{x \cup y}$ vi) $x \cap \bar{y}$

vii) $\bar{x} / y$ viii) $\bar{x}$

9. a) Explain classification of fuzzy data. Also explain how a classification tree is drawn from a classification problem. **8**

b) Explain any one data clustering algorithm with example. **8**

OR

10. Write a short note on Adaptive – Neuro – Fuzzy Inference system. **16**

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