Roll No. | | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (CSE) (2012 to 2017 E-III) (Sem.–7)

SOFT COMPUTING

Subject Code : BTCS-911

M.Code : 71903

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Write briefly :

1. What is soft computing?
2. List the limitation of perceptron.
3. What is meant by unsupervised learning?
4. State the importance of fuzzy sets.
5. What is Fuzzy Inference System (FIS)?
6. State the importance of genetic algorithm.
7. What is meant by genetic algorithm?
8. Describe population.
9. What are hidden layers?
10. Explain fuzzification.

SECTION-B

11. Draw the architecture of backpropagation algorithm.

12. Discuss the important features of Kohonen self organizing maps.

13. Discuss in detail the operations and properties of fuzzy sets.

14. With a neat flowchart, explain the operation of a simple genetic algorithm.

15. Consider the following two fuzzy sets :

$$A = \left\{ \frac{0.3}{x_1} + \frac{0.7}{x_2} + \frac{1}{x_3} \right\} \text{ and}$$

$$B = \left\{ \frac{0.4}{y_1} + \frac{0.9}{y_2} + \frac{1}{y_3} \right\}$$

Perform Cartesian product over these given fuzzy sets.

SECTION-C

16. Implement AND function using perceptron networks for bipolar inputs and targets.

17. a. With a suitable block diagram, explain the working principle of a Fuzzy Inference Systems.

    b. Develop a Fuzzy Inference System (FIS) editor for a liquid level controller model.

18. Write a short note on the applications of the following :

    a. Soft computing.

    b. Neuro-fuzzy modeling.

    c. Neural networks to pattern recognition system such as character recognition.

    d. Genetic algorithm.

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.