

Roll No.

Total Pages : 03

July-22-00387

B.Tech. EXAMINATION, 2022

Semester VI (CBCS)

PRINCIPLES OF SOFT COMPUTING

EC-609

Time : 3 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. (a) What are the basic models of an artificial neural network ? 5
- (b) What is supervised learning and how is it different from unsupervised learning ? 5

2. Explain the training algorithm of radial basis function network. **10**

Section B

3. Discuss in detail the operations and properties of fuzzy sets. **10**
4. Write the function theoretic form representation of crisp set operations. **10**

Section C

5. Design a combinational logic circuit with three inputs, the output is at logic 1 when more than one inputs are at logic 1. **10**
6. Design 1-to-8 DEMUX using two 1-to-4 Demultiplexers. Write down the applications of Demultiplexer. **10**

Section D

7. Consider the following two Fuzzy sets

$$A = \left\{ \frac{0.3}{x_1} + \frac{0.7}{x_2} + \frac{1}{x_3} \right\} \text{ and } B = \left\{ \frac{0.4}{y_1} + \frac{0.9}{y_2} \right\} \text{ Perform}$$

the Cartesian product over these given Fuzzy sets. **10**

8. Define Fuzzy matrix and Fuzzy graph. **10**

(Compulsory Question)

9. Answer the following : **2×10=20**

- (a) State the characteristics of an artificial neural network.
- (b) Mention the applications of perceptron networks.
- (c) List the properties of classical sets.
- (d) Apart from basic operations, state few other operations involved in fuzzy sets ?
- (e) What is the difference between Multiplexer and Demultiplexer ?
- (f) Draw the diagram of Comparator with multiplexer outputs ?
- (g) What is one-one mapping of a relation ?
- (h) What is meant by non-interactive Fuzzy sets ?
- (i) State the features of membership functions ?
- (j) State few applications of Adaline and Madaline ?