

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Tech. (ECE) (Sem.-7)

SOFT COMPUTING

Subject Code : BTEC/908D/18

M.Code : 90681

Date of Examination : 04-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS 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

1. Write briefly :

- a) Draw the basic model of the Madaline network.
- b) What is a counter-propagation network?
- c) What is an empty fuzzy set, and define the height of a fuzzy set?
- d) What is the concept of Regression Trees?
- e) What is the winner-take-all strategy in neural networks?
- f) Draw the McCulloch-Pitts neural network model.
- g) Explain the role of the fitness function in GA.
- h) What are the features of the membership function?
- i) What is meant by Lambda cut in a fuzzy set?
- j) What is ANN? Compare it with a biological neural network.

SECTION-B

2. Define the architecture of a perceptron. What do you mean by linear separability?
3. What is fuzzification? Explain the fuzzification method state with an example in detail.
4. What is the Crossover operator and its types? Explain it with a neat diagram in detail.
5. Explain the Tournament and Rank Selection process with a suitable example.
6. What is the principle of Ant colony optimization? Explain it with a neat diagram.

SECTION-C

7. Explain the significance of Adaptive Resonance Theory (ART). Also, draw and explain the architecture of ART for the binary pattern.
8. Explain the working of the back propagation neural network with a neat architecture and flowchart.
9. Describe the modeling and implementation of a fuzzy logic controller for an inverted pendulum.

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.