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Total No. of Pages : 02

Total No. of Questions : 07

BCA (Sem.-5)
SOFT COMPUTING
Subject Code : BTEC-909D-18
M.Code : 93169
Date of Examination : 19-12-2024

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 **SIX** questions carrying **TEN** marks each and students have to attempt any **FOUR** questions.

SECTION-A

1. Write briefly :

- a) Define soft computing constituents.
- b) Write four application areas where hard computing can be used.
- c) Who is the founder of fuzzy logic? How it is different from binary logic?
- d) Define fuzzy membership function.
- e) Why crossover is important in Genetic algorithms?
- f) Write four applications of Genetic algorithms.
- g) What is activation function?
- h) Give example, how a fuzzy relation is defined?
- i) Write five applications of Artificial Neural Networks.
- j) List the types of swarm intelligence.

SECTION-B

2. Define Soft Computing? Also write down the differences between soft computing and hard computing in detail.
3. What is Genetic Algorithm? Explain with the help of flow chart.
4. Define Neural Networks? Explain the perceptron rule and Delta Learning rules used in Neural Network.
5. Find union, intersection, complement and algebraic sum on these Fuzzy sets A and B.

$$A = \frac{1}{1.0} + \frac{0.75}{1.5} + \frac{0.3}{2.0} + \frac{0.15}{2.5} + \frac{0}{3.0},$$

$$B = \frac{1}{1.0} + \frac{0.6}{1.5} + \frac{0.2}{2.0} + \frac{0.1}{2.5} + \frac{0}{3.0}$$

6. What is ant colony optimization? Explain the algorithm in detail.
7. **Explain in detail :**
 - a) Data Clustering Algorithms.
 - b) Particle Swarm Optimization.

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.