BCA (Sem–5)
SOFT COMPUTING
Subject Code : BTEC-909D-18
M.Code : 93169
Date of Examination : 09-06-2023

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) Distinguish between artificial neuron & biological neuron.

   b) Differentiate between fuzzy set and crisp set.

   c) Define Mutation Rate.

   d) Write any two fuzzy membership functions with diagrams.

   e) State the operators of Genetic Algorithm.

   f) What is ART Network?

   g) Explain various activation functions used in ANN.

   h) What is Generalized Modus Tollens?

   i) Define Soft Computing.

   j) What is a fish shoal algorithm?

SECTION-B

2. What is the difference between hard computing and soft computing? What are the applications of soft computing in health-sector?

3. Explain the various learning methods of ANN in brief.

4. Consider two fuzzy subsets of the set X,X={a,b,c,d,e} referred to as A and B, A ={ l/a,0.3/b,0.2/c,0.8/d,0/e} and B={0.6/a,0.9/b,0.1/c,0.3/d,0.2/e}. Find support.

5. Write a short note on :

   a) Ant-based routing

   b) Swarm intelligence in bees.

6. Explain neuro-genetic hybrid systems and its applications.

SECTION-C

7. a) Classify the types of encoding employed in Genetic Algorithm.

   b) Consider two fuzzy subsets of the set X,X={a,b,c,d,e} referred to as A and B, A={l/a,0.3/b,0.2/c,0.4/d,0.5/e} and B={0.2/a,0.5/b,0.3/c,0.8/d,0.1/e}.

   Find :

   i) A'   ii) B'   iii) A|B   iv) A A B   v) A v B   vi) B V B'

8. Write short notes on :

   a) Adaptive neuro-fuzzy inference systems.

   b) Ant Colony Optimization.

9. Discuss in detail various types of activation functions used in neural network with the aid of graphical as well as mathematical representation and output.

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.