PVP 19

Code: 19CS4601A

III B.Tech - II Semester – Regular Examinations – JUNE 2022

SOFT COMPUTING
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place.

PART – A

1. a) What are the benefits of Soft Computing?
   b) What is fuzzification and defuzzification?
   c) What kind of Bit-wise operators are used in Genetic Algorithm?
   d) Define Swarm Intelligence.
   e) Give the applications of Bat algorithms.

PART – B

UNIT – I

2. a) What is Soft Computing? How Soft Computing is different from Hard Computing? 6 M
   b) Illustrate concept of computing systems. 6 M

OR

3. a) List out various applications of Soft Computing Techniques. 6 M
   b) How to apply soft computing technique to Automotive Systems and Manufacturing? 6 M

UNIT – II

4. a) Let X = {1, 2, 3, . . . , 10}. Determine the cardinalities of the following fuzzy sets and apply UNION and INTERSECTION operations. 6 M

$\tilde{A}$ = {(3, 1), (4, 0.2), (5, 0.3), (6, 0.4), (7, 0.6), (8, 0.8), (10, 1), (12, 0.8), (14, 0.6), (16, 0.8)}

$\tilde{B}$ = {(3, 0.8), (4, 0.9), (5, 0.7), (6, 0.4), (7, 0.7), (8, 0.9), (10, 1), (12, 0.7), (14, 0.8), (16, 0.2)}

b) Describe Fuzzy relations with examples. 6 M

OR

5. a) Compare and contrast Predicate Logic with Propositional Logic. 6 M

b) Explain the different defuzzification methods with examples. 6 M

UNIT-III

6. a) What are the major steps in Genetic Algorithm and How Genetic Algorithms are different from traditional optimization methods? 6 M

b) Write and explain about various encoding selection methods used in Genetic Algorithms. 6 M

OR

7. a) Enumerate various reproduction selection methods used in Genetic Algorithms and explain Tournament selection method with examples. 6 M

b) Define Cross over. Explain various Cross over operations in Genetic Algorithms. 6 M

UNIT – IV

8. a) Give the Ant Colony Optimization Algorithm with an example. 6 M

b) What are the advantages and disadvantages of Ant Colony Optimization? 6 M

OR

9. a) What is Particle Swarm Optimization? Give the Pseudo code for Particle Swarm Optimization. 6 M

b) What are the merits and demerits of Particle Swarm Optimization (PSO)? What are various variants of PSO? 6 M

UNIT – V

10. a) Describe the Firefly Behavior concept and write the idealized rules for standard Firefly Algorithm. 6 M

b) Write and explain about Cuckoo Search algorithm for a minimization problem. 6 M

OR

11. a) Give the Bat algorithm with their idealized rules. 6 M

b) What are the characteristics and rules of Flower Pollination algorithm? 6 M