**A**

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1.  What is Artificial intelligence?                                     CO1- R

    (a) Putting your intelligence into Computer    (b) Programming with your own intelligence

    (c) Making a Machine intelligent                (d) Putting more memory into Computer

2.  Rules are expressed as a set of ?                                    CO1- R

    (a) Switch statement                  (b) Using Loop

    (c) if-then statements                (d)  Using continue statement

3.  Artificial neural network used for                                   CO2- R

    (a) Pattern recognition    (b) Classification      (c) Clustering        (d) All of these

4.  Neural Networks are complex _____ with many parameters.     CO2- R

    (a) Linear Function                   (b) Nonlinear Functions

    (c) Discrete Functions                (d) Exponential Functions

5.  Where are Genetic Algorithms applicable?                             CO3- R

    (a) Real time            (b) Biology        (c) Artificial Life    (d) All the above
        application

6. --------------- mimic the principle of natural genetics                CO3- R

   (a) Genetic programming                    (b) Genetic Algorithm

   (c) Genetic Evolution                       (d) All of the above

7. There are also other operators, more linguistic in nature, called _____    CO4- R
   that can be applied to fuzzy set theory.

   (a) Hedges     (b) Lingual Variable     (c) Fuzz Variable     (d) None of the mentioned

8. The values of the set membership is represented by                CO4- R

   (a) Discrete Set   (b) Degree of truth     (c) Probabilities   (d) Both b & c

9. ---------------- of bit involves changing bits from 0 to 1 and 1 to 0.       CO5- R

   (a) Mutation        (b) Crossover        (c) Inversion        (d) Segregation

10. Reproduction operator is also known as ---------                CO5-R

    (a) Recombination                        (b) Selection

    (c) Regeneration                         (d) Segregation

### PART – B (5 x 2= 10 Marks)

11. Mention the key role of knowledge based systems                CO1- U

12. Distinguish artificial neural network and biological network        CO2-U

13. State the different selection methods in GA                CO3- R

14. List out the applications of FLC                CO4- U

15. Mention the role of fitness function in Genetic Algorithm.        CO5- U

### PART – C (5 x 16= 80 Marks)

16. (a)   Explain in detail about symbolic reasoning system.       CO1- R   (16)

Or

    (b)   Explain in detail about rule - based system       CO1- R   (16)


17. (a)   Design a perceptron to implement the truth table of AND Gate.   CO2-U   (16)
          Use bipolar inputs and targets.

Or

    (b)   Demonstrate back propagation training algorithm with the help of   CO2-U   (16)
          a flowchart.


18. (a)   Explain in different search techniques in Genetic algorithm.   CO3- U   (16)
          Discuss merits and demerits.

Or

    (b)   With a neat flowchart, explain the algorithm of Ant Colony   CO3- U   (16)

2

Optimization..

19. (a) Develop Fuzzy Inference System (FIS) using rule based    CO4- App   (16)
      components also illustrate Mamdani FIS.

Or

  (b) Build the Fuzzy Logic Controller using basic components and   CO4- App   (16)
      explain with neat diagram

20. (a) Apply Fuzzy Logic Controller for controlling the Washing   CO5- App   (16)
      Machine

Or

  (b) Explain step by step procedure for solving Unit commitment   CO5- App   (16)
      problems using genetic algorithm.

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