A   **Reg. No. :**

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. Which AI system will continue to analyze a problem until it finds the best   CO1- R
    solution?
    (a) Genetic algorithm   (b) Neural network

    (c) Intelligent agent   (d) Expert system

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

6. Genetic Algorithm are a part of   CO3- R

    (a) Evolutionary Computing

    (b) Inspired by Darwin's theory about evolution - "survival of the fittest"

    (c) Are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics
    (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. Consider a fuzzy set old as defined below old = {(20, 0), (30, 0.2), (40,   CO4- R
    0.4), (50, 0.6), (60, 0.8), (70, 1), (80, 1)}. Then the alpha-cut for alpha =
    0.4 for the set old will be

    (a) {(40 }   (b) {40, 50, 60, 70, 80}   (c) {(20, 30}   (d) {(20, 30, 40,50,60,70, 80}

9. Fuzzy logic controllers are based on _____   CO5- R

    (a) Heuristics   (b) Linear variables   (c) Non-linear variables   (d) None of the above

10. Ability to learn how to do tasks based on the data given for training or   CO5-R
    initial experience
    (a) Self organization   (b) Adaptive learning

    (c) Fault tolerance   (d) Robustness

<div align="center">PART – B (5 x 2= 10 Marks)</div>

11. Define expert system   CO1- R

12. Enumerate the necessity of activation function.   CO2-U

13. List the advantages of genetic algorithm over conventional algorithm   CO3- U

14. State Core, support and boundary in membership function   CO4- U

15. When genetic algorithm is preferred?   CO5- U

<div align="center">PART – C (5 x 16= 80 Marks)</div>

16. (a)   Draw and explain the architecture of expert system.   CO1- U   (16)
<div align="center">Or</div>
    (b)   Describe in detail about the approaches for intelligent control CO1- U   (16)
           architecture.

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17. (a) Demonstrate AND function using Hebb net with Bipolar inputs CO2-U (16)
and targets

Or

(b) Explain in detail the types of ANN architecture with neat sketch CO2-U (16)

18. (a) Describe the Ant Colony optimization technique with flow chart.. CO3- U (16)
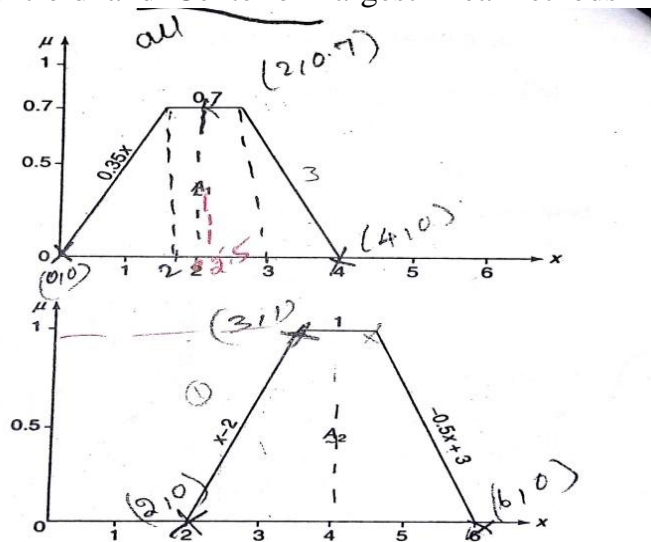
Or

(b) Explain the genetic algorithm for optimization problem. CO3- U (16)

19. (a) Analyze the different methods of defuzzification with an example CO4- App (16)

Or

(b) For the given membership function as shown in Figure below CO4- App (16)
,determine the determine the defuzzfied output value using
Centroid and Center of Largest Area methods

20. (a) Explain the Identification and control of linear and non-linear CO5- U (16)
dynamic systems using MATLAB

Or

(b) Briefly explain the neural network toolbox in MATLAB. CO5- U (16)

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