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Question Paper Code: 59376

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Open elective

Civil Engineering

15UEE976 - APPLIED SOFT COMPUTING

(Common to CSE, ECE, MECH, EIE, IT and Chemical Engineering branches)

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

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 $old = \{(20, 0), (30, 0.2), (40, 0.4), (50, 0.6), (60, 0.8), (70, 1), (80, 1)\}$. Then the alpha-cut for $\alpha = 0.4$ for the set old will be CO4- R
- (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 initial experience CO5-R
- (a) Self organization (b) Adaptive learning
- (c) Fault tolerance (d) Robustness

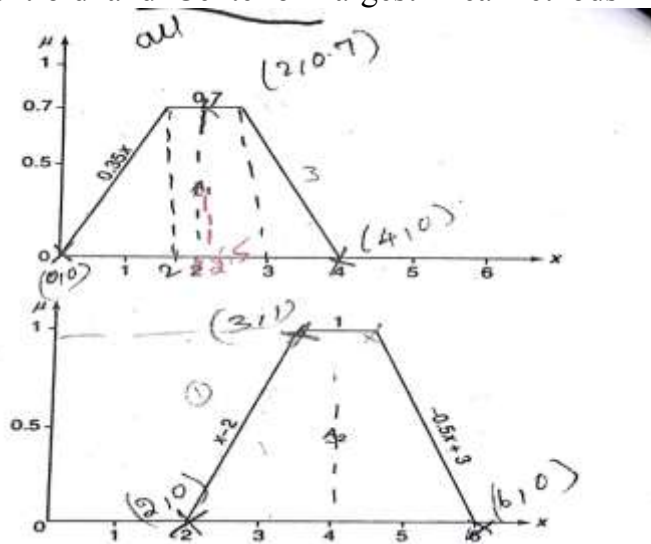
PART – B (5 x 2= 10 Marks)

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

PART – C (5 x 16= 80 Marks)

16. (a) Draw and explain the architecture of expert system. CO1- U (16)
- Or
- (b) Describe in detail about the approaches for intelligent control architecture. CO1- U (16)

17. (a) Demonstrate AND function using Hebb net with Bipolar inputs and targets CO2-U (16)
- 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 ,determine the determine the defuzzified output value using Centroid and Center of Largest Area methods CO4- App (16)



20. (a) Explain the Identification and control of linear and non-linear dynamic systems using MATLAB CO5- U (16)
- Or
- (b) Briefly explain the neural network toolbox in MATLAB. CO5- U (16)

