A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59376

B.E./B.Tech. DEGREE EXAMINATION, NOV 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 solution? CO1- R

   (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 _____ that can be applied to fuzzy set theory. CO4- R

(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

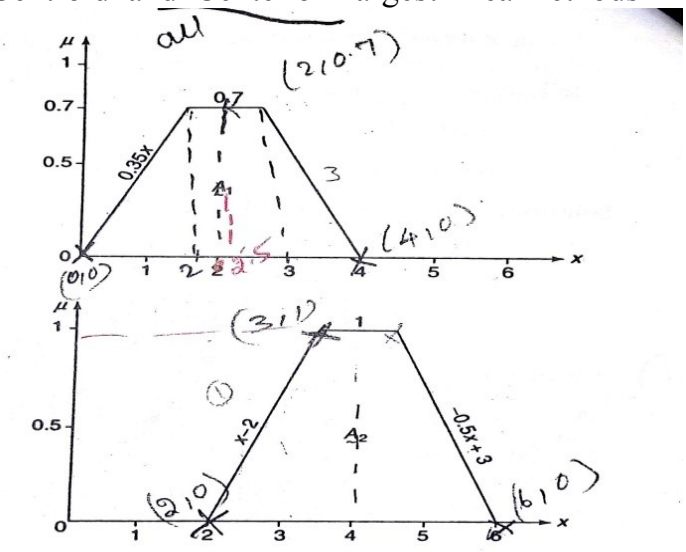
PART – C (5 x 16= 80 Marks)

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 defuzzfied 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)