C   **Reg. No. :**

Question Paper Code: 99408

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

Elective

Electronics and Communication Engineering

19UEC908- Soft Computing Techniques

(Regulations 2019)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which of the following best relate to reinforcement learning?   CO1- U

    (a) Error based learning   (b) Back propagation learning

    (c) Output-based learning   (d) None of the above

2. Each connection link in ANN is linked with _____ that contains   CO1- U
    statics about the input signal.

    (a) Neurons   (b) Activation function   (c) Weights   (d) Bias

3   Which of the following is associated with fuzzy logic?   CO2- U

    (a) Crisp set logic   (b) Many-valued logic   (c) Two-valued logic   (d)Binary set logic

4. How many level of fuzzifier is there?   CO2- U

    (a) 5   (b) 6   (c)7   (d) 4

5. ____ decides who becomes parents and how many children the parents have.   CO5- U

    (a) parent combination   (b) Parent selection   (c) Parent mutation   (d) Parent replace

PART – B (5 x 3= 15 Marks)

6. Define identity function and binary step function with example   CO1- U

7. What is adaptive resonance theory?   CO1- U

8. What is an alpha or lambda cut set and What is the cardinality of a Fuzzy set?   CO2- U

9. What are the different Fuzzy relation operation?   CO2- U

10. Mention the role of fitness function in GA   CO5- U

PART – C (5 x 16= 80Marks)

11.	(a)	Explain the various models of Artificial Neural Network	CO1- U	(16)
		Or		
	(b)	Draw and explain architecture of the Hebb Network training algorithm.	CO1- U	(16)
12.	(a)	Explain briefly the architecture of Hopfield networks with a neat diagram	CO1- U	(16)
		Or		
	(b)	Describe briefly the architecture of Self Organizing Maps with a neat diagram .	CO1- U	(16)
13.	(a)	Explain the various properties and operations on Fuzzy sets	CO2- U	(16)
		Or		
	(b)	Describe the operations of Fuzzy relations and Fuzzy compositions	CO2- U	(16)
14.	(a)	Explain the linguistic variable of Fuzzy logic and explain about various Fuzzy prepositions in Fuzzy logic.	CO3- U	(16)
		Or		
	(b)	Describe the formation and decomposition of Fuzzy rules in detail.	CO2- U	(16)
15.	(a)	Analyze the various derivative based optimization algorithms and explain the method of steepest descent optimization method with algorithm	CO4-Ana	(16)
		Or		
	(b)	Analyze the various derivative free optimization algorithms in detail and explain in detail about steepest descent optimization with algorithm	CO5-Ana	(16)

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