Reg. No.												

Question Paper Code	12149

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Eighth Semester

Computer Science and Engineering

(Common to Electronics and Communication Engineering)

CS8086 - SOFT COMPUTING

(Regulations 2017)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is the relationship between biological and artificial neuron?	*2,K1,CO1*
2.	Mention few applications of Adaline and Madaline network.	*2,K1,CO1*
3.	Give examples for supervised and unsupervised learning neural networks.	*2,K1,CO2*
4.	What do you mean by linear separability?	*2,K1,CO2*
5.	Consider set X = {2, 4,6}. Find its power set, cardinality and cardinality of power set.	*2,K1,CO3*
6.	Compare and contrast classical logic and fuzzy logic.	*2,K2,CO3*
7.	Define fuzzy number.	*2,K1,CO4*
8.	What are the basic Genetic Algorithm Operators?	*2,K1,CO4*
9.	What is inversion and deletion?	*2,K1,CO5*
10.	List some bit-wise operator.	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	With a neat flow chart, explain the training process of perceptron network.	*13,K2,CO1*
		OR	
	b)	Discuss in detail the various types of activation function used in neural network with aid of mathematical representation and its output.	*13,K2,CO1*
12.	a)	Construct a Kohonen self-organizing map to cluster the four given vectors, [0 0 1 1], [1 0 0 0], [0 1 1 0] and [0 0 0 1]. The number of clusters to be formed is two. Assume an initial learning rate of 0.5. Initial weigh matrix is given as	*13,K2,CO2*

$$w_{ij} = \begin{bmatrix} 0.2 & 0.9 \\ 0.4 & 0.7 \\ 0.6 & 0.5 \\ 0.8 & 0.3 \end{bmatrix}_{4\times 2}$$

OR

b) Discuss in detail about Spike Neuron Models *13,K2,CO2*

13. a) Explain defuzzification methods in detail. *13,K2,CO3*

OR

b) Explain the different types of membership function used in fuzzification process. *13,K2,CO3*

14. a) Explain different encoding methods in detail. *13,K2,CO4*

OR

b) Write short notes on following *13,K2,CO4*
(i) Reproduction
(ii) Inheritance

15. a) Explain various crossover techniques in detail. *13,K2,CO5*

OR

b) Explain various selection methods in detail. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Apply simplified Fuzzy ARTMAP to obtain solution of pattern classification/ recognition problems. *15,K3,CO6*

OR

b) With necessary diagrams apply Fuzzy back propagation for earthquake damage evaluation. *15,K3,CO6*