

Roll Number.....

Enrollment No.

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Odd Semester Examination-2024
Program Name: B. Tech(Backlog).

Paper Name: Soft Computing (DE-1)
Time: 2Hr 30 minutes

Paper Code: BTCSEAIDE12
Max. Marks: 75

Section A (7 x 5 = 35) ALL Questions are compulsory				
Q. No.	Question	Marks	CO	BL
1.	Define Soft Computing. Mention the difference between soft computing and hard computing.	5	CO1	L1
2.	A = {(X1, 0.6), (X2, 0.2), (X3, 0.5), (X4, 0.49)} B = {(X1, 0.18), (X2, 0.8), (X3, 0), (X4, 0.9)} Then Find a) AUB b) A ∩ B c) $\bar{A}$	5	CO4	L3
3.	Illustrate Hopfield network. Mention its important characteristics.	5	CO2	L2
4.	Differentiate between Fuzzy set and Crisp set	5	CO1	L2
5.	Describe the structure and function of single neuron.	5	CO1	L3
6.	Write the characteristic and application of ANN	5	CO3	L2
7.	What are the different types of techniques used in soft computing	5	CO2	L1

Section B (4 x 10 = 40) Attempt any FOUR Questions				
Q. No.	Question	Marks	CO	BL
1.	(a) Explain Artificial Neural Network with neat diagram. Discuss the important characteristics of ANN. (b) Define and explain back propagation algorithm	10	CO2 CO3	L2 L1
2.	(a) Define Radial Basis Function Network (RBFN). Describe the key components of RBFN. (b) Discuss the different activation function used in neural network	10	CO4 CO2	L2 L2
3.	Using Genetic Algorithm Maximize $F(x)=x^2$ over (1....31) with initial x values (12,25,5,19). Show one cross over and mutation operation.	10	CO4	L5
4.	a) Mention the taxonomy of Neural network in details. b) Write notes on Fitness function and Bitwise operator used in Genetic Algorithm.	10	CO2 CO5	L2 L1
5.	a) Write important application of fuzzy logic. Define membership function used in fuzzy set.	10	CO1 CO4	L2 L1

	b) Define Machine learning (ML). Discuss the different category of ML.			
6.	a) Discuss the differences and similarities between Genetic algorithm and other traditional method b) Differentiate between Hopfield and Boltzmann machine	10	CO1 CO3	L4 L2