Question Paper Code	13055

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024
Third Semester
M.E. - Communication Systems
20PCOEL308 - SOFT COMPUTING TECHNIQUES
Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	List down various approaches for machine learning.	2	K1	CO1
2.	What is the role of genetic algorithms in soft computing?	2	K1	CO1
3.	How does Genetic Algorithm differ from traditional algorithm?	2	K1	CO2
4.	Differentiate between Roulette wheel selection and tournament selection.	2	K2	CO2
5.	Differentiate between single-layer and multi-layer feed forward networks.	2	K2	CO3
6.	Draw the architecture of back propagation algorithm.	2	K1	CO3
7.	Define the union of fuzzy sets.	2	K1	CO4
8.	What is fuzzy inference system?	2	K1	CO4
9.	Define neuro-fuzzy control.	2	K1	CO6
10.	What is rule base structure identification?	2	K1	CO6

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11.	a)	Summarize the main characteristics that distinguish soft computing techniques from traditional computing method.	13	K2	CO1
		OR			
	b)	Explain the primary differences between conventional AI and computational intelligence.	13	K2	CO1
12.	a)	Classify the methods used in selection operators in Genetic algorithm and Explain.	13	K2	CO2
		OR			
	b)	Design a GA workflow where mutation plays a crucial role in solving a combinational optimization problem.	13	K2	CO2
13.	a)	Explain the concept of supervised learning and its importance in neural networks.	13	K2	CO3
		OR			

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **13055**

b)	Describe the structure and components of a supervised learning neural network. Discuss the roles of input, hidden, and output layers in the learning process.	13	K2 CO3

14. a) Explain with neat block diagram the various components and operation of a fuzzy logic system. — 13 K2 CO4

OR

b) Describe how fuzzy sets are used to handle uncertainty in decision-making processes. — 13 K2 CO4

15. a) Examine the role of rule base structure identification in addressing the problem and how it contributes to solution accuracy. — 13 K3 CO6

OR

b) Analyse the primary purpose of using data clustering in machine learning. — 13 K3 CO6

PART - C (1 × 15 = 15 Marks)

16. a) Assess the accuracy of coactive neuro-fuzzy modeling in dynamic environments. What factors impact its performance? — 15 K3 CO5

OR

b) Examine how a classification tree differs from a regression tree. In what situations would each be used? — 15 K3 CO5