Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 60010

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Seventh Semester
Information Technology
U19ITV33 – SOFT COMPUTING
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Write the principle involved in Learning Vector Quantization.	2	K1	CO1
2.	How do Multiple Adaptive Linear Neurons differ from single ADALINE neurons?	2	K1	CO1
3.	Define approximate reasoning.	2	K1	CO2
4.	Differentiate between classical sets and fuzzy sets.	2	K1	CO2
5.	What distinguishes a Gaussian Machine from other neural networks?	2	K1	CO3
6.	Define simulated annealing.	2	K1	CO3
7.	What are Holland classifier systems used for?	2	K1	CO4
8.	List the different types of genetic algorithms.	2	K1	CO4
9.	What is image fusion in the context of soft computing?	2	K1	CO5
10.	Name few applications of hybrid fuzzy GA systems.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Explain in detail about the basic models of Artificial Neural Networks.	13	K2	CO1

		(OR)			
	b)	With neat architecture, explain the training algorithm of Kohenenself-organizing feature maps.	13	K3	CO1
12.	a)	Analyze the different types of defuzzification methods with relevant mathematical expression and diagram.	13	K2	CO2
		(OR)			
	b)	Explain with a neat block diagram the various components and operation of a fuzzy logic system.	13	K2	CO2
13.	a)	Explain adaptive resonance theory with an example.	13	K2	CO3
		(OR)			
	b)	Illustrate the structure and learning process in Boltzmann machine.	13	K2	CO3
14.	a)	Discuss in detail about the basic terminologies in Genetic Algorithm.	13	K2	CO4
		(OR)			
	b)	Explain the simple form of Genetic Algorithm with a neat diagrammatic representation.	13	K2	CO4
15.	a)	Implement Optimization of Traveling Salesman Problem(TSP) using Genetic Algorithm approach.	13	K3	CO5
		(OR)			
	b)	Discuss the application of soft computing techniques in rocket engine control systems.	13	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Explain how soft computing techniques are applied in real-world problem-solving, focusing on their use in image fusion, neural network classification, and genetic algorithms. Discuss how the genetic algorithm can be utilized to solve the traveling salesman problem and optimize Internet searching techniques.	15	K3	CO5
		(OR)			
	b)	A research team is developing an autonomous drone navigation system that must optimize its flight path to efficiently deliver packages in a large city. The environment is dynamic, with variables like traffic, weather conditions, and no-fly zones that constantly change. The team decides to use a Genetic Algorithm (GA) to optimize the drone's flight paths while ensuring safety and efficiency. Additionally, they are exploring Holland Classifier Systems to allow the drones to adapt to changing environments in real time. How the Holland Classifier System can enable the drones to learn and adapt to the dynamic environment, incorporating reinforcement learning principles.	15	K3	CO5