Reg. No.												

Question Paper Code	13643

M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Third Semester

M.E. - Computer Science and Engineering

20PCSEL309 - BIO-INSPIRED COMPUTING

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	What are the applications of Optimization?	2	K1	CO1
2.	Differentiate Exploration from Exploitation.	2	K2	CO1
3.	Define isotropic Random walk.	2	K1	CO2
4.	Why Eagle strategy is so efficient?	2	K1	CO2
5.	List the genetic operators.	2	K1	CO3
6.	How Differential evolution is different from Genetic algorithms?	2	K1	CO3
7.	Define Attraction and Diffusion.	2	K1	CO4
8.	What do you understand by Swarm robotics?	2	K1	CO4
9.	Define Image Processing.	2	K1	CO5
10.	What do you mean by Heaviside function H(u)?	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain how optimal convergence is done using Newton-Raphson's method.	13	K2	CO1
		OR			
	b)	Illustrate any four Nature-inspired algorithms.	13	K2	CO1
12.	a)	Explain the step sizes, Stopping Criteria and Search efficiency in detail.	13	K2	CO2
		OR			
	b)	Describe in detail about Levy distribution and Flights.	13	K2	CO2
13.	a)	Describe genetic algorithm in detail with an example.	13	K2	CO3
		OR			
	b)	Demonstrate Convergence analysis of Differential Evolution in detail.	13	K2	CO3

14. a) Explain PSO algorithm in detail. *13 K2 CO4*

OR

b) Illustrate Firefly Algorithm with an example. *13 K2 CO4*

15. a) Experiment with the various Bio-inspired computation and its applications in image processing. *13 K3 CO5*

OR

b) Apply the Fine-Tuning Deep Belief Networks using Cuckoo Search. *13 K3 CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Analyze Mobile Object Tracking Using Cuckoo Search algorithm. *15 K4 CO6*

OR

b) Analyze Improved Weighted Threshold Histogram Equalization Algorithm using BAT algorithm. *15 K4 CO6*