Question Paper Code	12728

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024
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.	Differentiate Exploration from Exploitation.	2	K2	CO1
2.	Define Bio-inspired Computing	2	K1	CO1
3.	Define isotropic Random walk.	2	K1	CO2
4.	Discuss Stochastic Tunneling.	2	K1	CO2
5.	List the genetic operators.	2	K1	CO3
6.	How to formulate the fitness function?	2	K2	CO3
7.	Define Swarm intelligence.	2	K1	CO4
8.	Why the Firefly Algorithm is Efficient?	2	K1	CO4
9.	Recall Cuckoo search algorithm.	2	K1	CO5
10.	How Deep belief Net is Constructed?	2	K2	CO5

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

			Marks	K-Level	CO
11.	a)	i) Illustrate in detail about Gradient descent algorithms.	7	K2	CO1
		ii) Explain Parameter Tuning in detail.	6	K2	CO1

OR

	b)	i) Explain No-Free Lunch theorem.	7	K2	CO1
		ii) Explain in detail Newton's method.	6	K2	CO1

12.	a)	Explain the step sizes, Stopping Criteria and Search efficiency in detail.	13	K2	CO2

OR

	b)	Discuss in detail about Levy distribution and Flights.	13	K2	CO2

13.	a)	Discuss about Schema theorem in detail.	13	K2	CO3

OR

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

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b) Illustrate in detail about Differential Evolution and its convergence analysis.   13   *K2*   *CO3*

14. a) Discuss in detail about Ant Colony Optimization towards feature selection.   13   *K2*   *CO4*

OR

b) Explain in detail Particle Swarm Optimization and Ant Bee Algorithm.   13   *K2*   *CO4*

15. a) Outline the various Bio-inspired computation and its applications in image processing.   13   *K2*   *CO5*

OR

b) Illustrate the Fine-Tuning Deep Belief Networks using Cuckoo Search.   13   *K2*   *CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Analyze Ground Glass Opacity Nodules Detection and Segmentation using Snake Model.   15   *K4*   *CO6*

OR

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