Define, explain, discuss with suitable example

1. Soft Computing
2. Hard Computing
3. Artificial Intelligence (AI)
4. Computational Intelligence (CI)
5. Swarm intelligence
6. Evolutionary Computing
7. Fuzzy Logic
8. Artificial Immune System (AIS)
9. Fitness function
10. Cross-over, mutation, chromosomes, genes, particles

Explain pseudocode/flowchart, steps and details of the following algorithm

1. Genetic Algorithm (GA)
2. Particle swarm optimization (PSO)
3. Artificial Bee Colony (ABC)
4. Ant Colony Optimization (ACO)
5. Bacterial Foraging Optimization (BFO)
6. Genetic Programming (GP)
7. Differential Equation (DE)
8. Clonal Selection Algorithm
9. Danger Theory
10. Negative Selection Algorithm
11. Pseudocode in AIS

Define following terms with mathematical formulas

1. Particle position in PSO
2. Velocity equations in PSO
3. Fitness calculation based on given problem
4. Employed bee, onlookers and scout bees in ABC
5. Chemotaxis and Reproduction in BFOA
6. Terms and equations in each algorithm

Explain in brief

1. Global Optimization
2. Types of optimization
3. Example of optimization
4. Discuss pros and cons of deterministic approaches to optimization
5. Heuristic approaches to optimization
6. Relevance of biology to CI-based algorithms
7. Stigmergy and Artificial Pheromone
8. Fuzzy Logic: Introduction and example
9. Membership Function: Triangular, Trapezoidal, Gaussian, Tall etc.

10. Differentiate between crisp logic and fuzzy logic
11. Elements of fuzzy systems
12. Comparison of crisp and fuzzy logic
13. Fuzzy set operators

Numerical Questions and scenario-based questions on:

1. Fuzzy sets
2. Cross-over
3. Mutation
4. PSO-position and velocity values