**MCSE 662: Evolutionary Algorithm**

**Midterm Exam**

**Full Mark: 100** **Time: 2 Hours**

1. What do you mean by 'Optimization'? Briefly discuss Unconstrained, Constrained, Multi-Objective, Multimodal, Combinatorial Optimizations with appropriate examples.
2. What are the basic properties of Evolutionary Algorithms (EAs)? Does an EA method give guaranty of the optimum outcome? Why such methods are preferable for engineering optimization tasks?
3. What are the characteristics of Intelligence? Explain two of those characteristics explaining their importance for intelligent behavior.
4. Define the terms local search, global search, exploration and exploitation? Explain importance of the properties/terms in solving optimization problems.
5. What is elitism operation in Genetic Algorithm (GA)? Why it is important?
6. What are the basic criteria/ways to stop GA? Write Pros and Cons of each criterion.
7. "In operation of a population-based method, a few bad solutions are not harmful; however, good solution(s) need to retain" – Justify the statement for GA.
8. What do you mean by fitness function? Is it related to problem or algorithm? Justify
   your answer.
9. Suppose two TSP solutions are 1-2-4-5-3-6 and 1-5-4-2-6-3 where numeric values are the city indexes. Generate an offspring from the solutions using Enhanced Edge Recombination method.
10. Draw a flowchart for the Criminal Suspect Recognition (CSR) with GA.