Q1. What are the advantages and disadvantages of greedy method?

Ans-

→ Advantages of greedy method:-

1. Simple and easy to understand:
   - Greedy methods are often straightforward to implement and reason about.

2. Efficient for certain problems:
   - They can provide optimal solutions for specific problems, like finding the shortest path on a graph with non-negative edge weights.

3. Fast execution time:
   - Greedy algorithms generally have lower time complexity compared to other algorithms for certain problems.

→ Disadvantages:-

1. Not always optimal:
   - Greedy methods prioritize local optima over global optima, leading to suboptimal solutions in some cases.

2. Difficult to prove optimality:
   - Proving the optimality of a greedy method can be challenging, requiring careful analysis

3. Sensitive to input order:
   - The order of input data can affect the solution generated by a greedy algorithm.

Q2. What are the characteristics of greedy algorithm?

Ans. The characteristics of greedy algorithm:-

1. Greedy choice property:-
   - At each step, a greedy algorithm makes the choice that seems the best at that moment, without considering future consequences.

2. Optimal ~~sub~~ Substructure:-
   - Problems that can be solved using a greedy algorithm often exhibit optimal substructure.

3. Efficiency:
   - Greedy algorithms are often computationally efficient, with time complexity of ~~O(n)~~ O(nlogn) or O(n).

4. Not always optimal:
   - Greedy algorithms are not guaranteed to find the optimal solution for all problems.

5. ~~Ex~~ Independent subproblems:
   - The subproblems of the problem being solved by the greedy algorithm should be independent.

6. Decision-making at each step:
   - In a Greedy Algorithm, decisions are made at each step based on the current conditions of the problem.

→ Conclusion:
   - Successfully implemented one of the greedy search ~~if~~ algorithms.