7 Lecture - CS502

Important Mcqs

1. **Which of the following is a characteristic of Greedy algorithms?**
   A) Always find the optimal solution
   B) Make locally optimal choices
   C) Require backtracking
   D) Can only be used for discrete problems
   Answer: B) Make locally optimal choices

   Which of the following is an example of a problem that can be solved using a greedy algorithm?
   A) Traveling salesman problem
   B) Knapsack problem
   C) Graph coloring problem
   D) All of the above
   Answer: B) Knapsack problem

   Which of the following is a disadvantage of greedy algorithms?
   A) Always find the optimal solution
   B) May get stuck in local optima
   C) Are only useful for small problems
   D) Require exhaustive search
   Answer: B) May get stuck in local optima

   Which of the following is a common technique used to improve greedy algorithms?
   A) Dynamic programming
   B) Backtracking
   C) Randomization
   D) Exhaustive search
   Answer: C) Randomization

   Which of the following is an example of a greedy algorithm?
   A) Breadth-first search
   B) Depth-first search
   C) Dijkstra's algorithm
   D) Prim's algorithm
   Answer: D) Prim's algorithm

   Which of the following is a necessary condition for a problem to be solved using a greedy algorithm?
   A) The problem must have optimal substructure
   B) The problem must be a minimization problem
   C) The problem must have only one solution
   D) The problem must be a continuous problem
   Answer: A) The problem must have optimal substructure

   Which of the following is an example of a problem that cannot be solved using a greedy

algorithm?
A) Minimum spanning tree
B) Shortest path problem
C) Maximum flow problem
D) Traveling salesman problem
Answer: D) Traveling salesman problem

Which of the following is a disadvantage of using a greedy algorithm?
A) They are computationally expensive
B) They always guarantee finding the optimal solution
C) They require a lot of memory
D) They may not always find the optimal solution
Answer: D) They may not always find the optimal solution

Which of the following is a heuristic used in some greedy algorithms?
A) Randomization
B) Exhaustive search
C) Divide and conquer
D) Backtracking
Answer: A) Randomization

Which of the following is an example of a problem that can be solved using a greedy algorithm with a proof of optimality?
A) Huffman coding
B) Fractional knapsack problem
C) Job sequencing with deadlines
D) All of the above
Answer: B) Fractional knapsack problem