**UNIT 3 - Greedy and Dynamic Programming MCQs**

1. From the following given tree, what is the code word for the character ‘a’?

[huffman-code-questions-answers-q7](https://www.sanfoundry.com/wp-content/uploads/2018/07/huffman-code-questions-answers-q7.png)

**a) 011**  b) 010 c) 100 d) 101

1. The type of encoding where no character code is the prefix of another character code is called?  
   a) optimal encoding **b) prefix encoding** c) frequency encoding d) tree encoding
2. We use dynamic programming approach when

a) We need an optimal solution **b) The solution has optimal substructure**

c) The given problem can be reduced to the 3-SAT problem d) It's faster than Greedy

1. Four matrices M1, M2, M3 and M4 of dimensions pxq, qxr, rxs and sxt respectively .**The minimum number of scalar multiplications required to find the product M1M2M3M4 using the basic matrix multiplication method is**

If p = 10, q = 100, r = 20, s = 5 and t = 80, then the number of scalar multiplications needed is

* 1. 248000 b) 44000 **c) 19000** d) 25000

1. Consider the following two sequences :

X = < B, C, D, C, A, B, C >, and

Y = < C, A, D, B, C, B >

The length of longest common subsequence of X and Y is :

a) 5 b) 3 **c) 4** d) 2

1. If a problem can be broken into subproblems which are reused several times, the problem possesses \_\_\_\_\_\_\_\_\_\_\_\_ property.
   1. **Overlapping subproblems** b)Optimal substructure c) Memoization d)Greedy
2. In dynamic programming, the technique of storing the previously calculated values is called \_\_\_\_\_\_\_\_\_\_\_

a) Saving value property b) Storing value property **c) Memoization** d) Mapping

1. Which of the following problems is NOT solved using dynamic programming?

a) 0/1 knapsack problem b) Matrix chain multiplication problem

c) Longest Common Subsequence problem **d) Fractional knapsack problem**

1. What is the time complexity of the above dynamic programming implementation of the longest common subsequence problem where length of one string is “m” and the length of the other string is “n”?

a) O(n) b) O(m) c) O(m + n) **d) O(mn)**

1. Which of the following standard algorithms is not a Greedy algorithm?

**a) Matrix Chain Multiplication** b) Prim's algorithm

c) Kruskal algorithm d) Huffman Coding

1. Which of the following is true about Huffman Coding?
   1. Huffman coding may become lossy in some cases
   2. Huffman Codes may not be optimal lossless codes in some cases
   3. **In Huffman coding, no code is prefix of any other code.**
   4. BOTH A and B
2. The worst case time complexity of Prim’s algorithm if adjacency matrix is used?

a) O(log V) **b) O(V2)** c) O(E2) d) O(V log E)

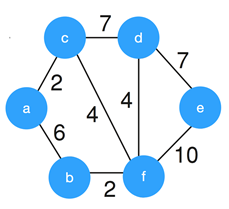
1. Kruskal’s algorithm is used to \_\_\_\_\_\_

**a) find minimum spanning tree**  b) find single source shortest path

c) find all pair shortest path algorithm d) traverse the graph

1. What is the time complexity of Kruskal’s algorithm?

a) O(log V) b) O(E log V) c) O(E2) **d) O(V log E)**

 15. Consider the given graph.

What is the weight of the minimum spanning tree using the Kruskal’s algorithm?  
a) 24 b) 23 c) 15 **d) 19**