Q.P. Code: 00007006

[Time:2.30 Hrs] **[Marks:75]**

Please check whether you have got the right question paper.

N.B: 1. All question are compulsory.
2. Figures to the right indicate full marks.

Q.1 **Attempt any four of the following** **20**

A Briefs describe Big-O and Omega Ω in algorithm analysis?
B Define algorithm. State its essential characteristics?
C Write an algorithm for adding two integers that user provided?
D Write a note on Master Theorem. Give an example?
E Use Master's theorem to solve the given problem, T (n) = 4T(n/2) + n
F Which factors affect how well an algorithm performs?

Q.2 **Attempt any four of the following** **20**

A Define tree. Explain following term
a) Root
b) Parent
c) Child
d) Path
e) Subtree
B Wrote a short note on pre-order traversal?
C Define graph. Explain graph Representation
a) Sequential representation (Adjacency matrix representation)
b) Linked list representation (Adjacency list representation)
D Explain Depth first search with example?
E With the help of selection sort algorithm write down the step for an unsorted array. [30, 10, 12, 8, 15, 1]
F With help of example explain binary search algorithm?

Q.3 **Attempt any four of the following:** **20**

A Following is the algorithm Classification,
a) Classification By Implementation Method
b) Classification By Design Method
c) Classification By Design Approaches
Briefly explain any two?
B What is Greedy algorithm? Explain its strategy?
C Write down advantage and disadvantages of Divide and Conquer?
D Explain any 5 applications of divide and conquer?
E Describe Longest common subsequence.?
F Briefly explain Dynamic Programming Approaches?

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Q.4 **Attempt any three of the following** **15**

A Explain why analysis of algorithm is important?

B Write a note on Master Theorem for Subtract and Conquer Recurrences?

C With the help of example explain Binary Search Tree?

D Distinguish between Dijkstra's Algorithms vs Bellman-Ford Algorithm?

E Explain Fibonacci number using dynamic programming approach.?

F Write down the algorithm step of Breadth First Search (BFS) and Depth First Search (DFS)?

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