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SDCCA305

III Semester B.C.A. Degree Examination, December/January - 2025/26
(SEP Scheme Freshers)
COMPUTER APPLICATIONS
Design and Analysis of Algorithms
Paper - CA3T3

LIBRARY

Time : 3 Hours **Maximum Marks : 80**

Instructions **:**

Answer All the Sections.

SECTION - A

I. Answer any Ten questions. Each question carries 2 marks. (10×2=20)

1. Define order of growth.
2. What is recursive algorithm?
3. Define time complexity.
4. Expand BFS and DFS.
5. What is meant by Exhaustive search?
6. Define Brute-force algorithm.
7. What are the advantages of decrease and conquer methodology?
8. What are the applications of quick sort?
9. What is binary search?
10. What do you mean by Greedy technique?
11. Define decision tree.
12. Define NP-Problem.

SECTION - B

II. Answer any Six questions. Each question carries 5 marks. (6×5=30)

13. Explain the fundamentals of algorithmic problem solving.
14. What are the criteria that an algorithm must satisfy?

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15. Write the working of selection sort with suitable example.

16. Compare between DFS and BFS.

17. Explain merge sort with an example.

18. Write an algorithm of topological sorting.

19. Explain the Prim's algorithm with an example.

20. Explain the Lower-Bound Arguments.

SECTION - C

III. Answer any Three questions. Each question carries 10 marks. **(3×10=30)**

21. Explain the asymptotic notations in brief. **(10)**

22. Define Knapsack Problem. Consider the following items with capacity $W = 7$. Find the maximum optimum value. **(10)**

Item	Weight	Value
1	1	1
2	3	4
3	4	5
4	5	7

23. Define a binary tree. Explain the algorithm of tree traversal with an example. **(10)**

24. Define Dijkstra's algorithm. Find the shortest path from node A to E. **(10)**

