



Reg. No.

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V Semester B.C.A. 6 (NEP) Degree Examination, March/April - 2024

**DESIGN AND ANALYSIS OF ALGORITHMS**

**(Regular)**

**Time : 2 Hours**

**Maximum Marks : 60**

**Instructions to Candidates:**

- 1) All Sections are compulsory.
- 2) Draw diagram wherever necessary.
- 3) Give examples if needed.

**SECTION - A**

**Answer any TEN questions. Each question carries 2 marks.**

**(10×2=20)**

1. Define algorithm? Mention its criterias.
2. Mention areas where algorithms are used.
3. Define asymptotic Notation? Name them.
4. Define space complexity and time complexity.
5. What is Prim's Algorithm ?
6. Define Decrease - and - conquer.
7. Define decision tree? Mention key factors.
8. Define binary search.
9. What is Dijkstras Algorithm?
10. What is basic efficiency class? Name any two classes.
11. Define greedy method? Mention any one application of it.
12. What is NP class problem?

**[P.T.O.]**

**SECTION - B**

Answer any **FOUR** from the following questions. Each question carries **5** marks.

(4×5=20)

13. Explain characteristics of Algorithm.
14. Explain  $\theta$ (theta), big 'O',  $\Omega$  (omega) Notations with examples.
15. Write algorithm for quick sort.
16. Explain basic tree traversal techniques. Write algorithm for them.
17. Write pseudocode for Dijkstra's Algorithm.

**SECTION - C**

Answer any **TWO** of the following questions. Each question carries **10** marks.

(2×10=20)

18. Explain Brute force method Mention its Applications. Solve selection sort for the following Numbers 9,1,8,2,7,3,6,4,5
  19. a) Explain travelling salesman problem. (5)  
b) Discuss knapsack problem using greedy method. (5)
  20. a) Explain divide-and-conquer. Write pseudocode (5)  
b) Explain Kruskal's Algorithm with example. (5)
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