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DCCA412

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IV Semester B.C.A. Degree Examination, June/July - 2026**COMPUTER APPLICATIONS****Design and Analysis of Algorithm****(SEP Scheme)****Time : 3 Hours****Maximum Marks : 80****Instructions to Candidates:**

Answer all the Sections.

SECTION - A**Answer any TEN of the following questions. Each carries 2 marks. (10×2=20)**

1. Define algorithm and list its features.
2. What are time and space complexity?
3. What are iterative and recursive algorithms?
4. List any two applications of brute force method.
5. What is fake coin problem?
6. List the different types of Binary Tree Traversal.
7. What do you mean by hash collision?
8. Define dynamic programming.
9. What is transitive closure?
10. Define class NP problem.
11. What is Hamiltonian circuit problem? Give an example.
12. What is backtracking?

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SECTION - B**Answer any FIVE questions. Each carries 6 marks. (5×6=30)**

13. Find the prime numbers between 1 to 60 using sieve of Eratosthenes problem.
14. Mention the mathematical analysis of tower of hanoi problem.

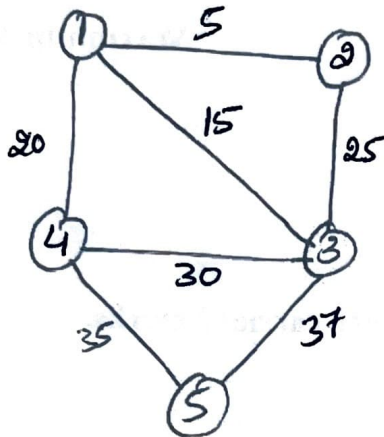
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15. Write bubble sort algorithm. Explain with an example.
16. Write the algorithm of Russian peasant multiplication and multiply 18 by 7.
17. What is sorting by counting? Explain general procedure involved in sorting by counting with example.
18. Find the minimum weight spanning tree by Prim's algorithm.

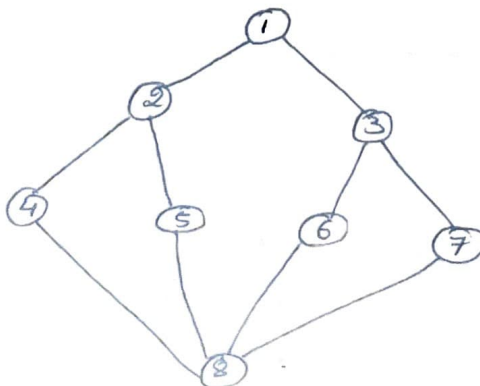


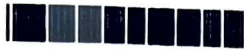
19. Explain decision tree for insertion sort.
20. Find sum of subsets using back tracking for $S = \{7, 11, 13, 24\}$ given $m = 31$.

SECTION - C

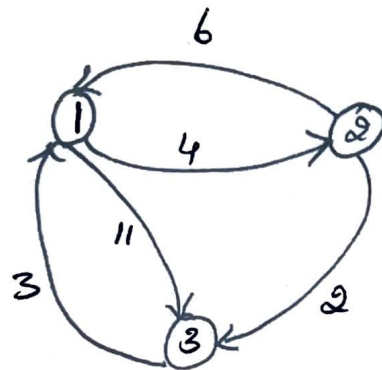
Answer any Three of the following questions. Each carries 10 marks. $(3 \times 10 = 30)$

21. Explain the asymptotic notations used in efficiency measure of an algorithm.
22. Find the DFS and BFS traversal for the given graph.





23. Apply Floyd's algorithm to the following graph.



24. Solve the travelling salesman problem using branch and bound method.

