IIPS DAVV Second Internal Test M.Tech. 6 Sem
Analysis and Design of Algorithms -Test 2

1. What is an algorithm?
   a) A set of instructions to perform a task
   b) A type of programming language
   c) A type of hardware component
   d) A device used for data storage

2. Which notation is commonly used to represent the time complexity of an algorithm?
   a) O(n)
   b) Ω(n)
   c) Θ(n)
   d) All of the above

3. What is the purpose of analyzing algorithms?
   a) To determine their correctness
   b) To optimize their performance
   c) To make them more readable
   d) To make them easier to implement

4. Which of the following is an example of a dynamic programming problem?
   a) Longest common subsequence
   b) Binary search
   c) Merge sort
   d) Quick sort

5. Which of the following is an example of a graph algorithm?
   a) Binary search
   b) Merge sort
   c) Depth-first search
   d) Quick sort

6. What is the time complexity of binary search?
   a) O(n)
   b) Ω(n)
   c) Θ(n)
   d) O(log n)

7. What is the time complexity of merge sort?
   a) O(n)
   b) Ω(n)
   c) Θ(n)
   d) O(n log n)

8. What is the time complexity of quicksort in the worst case?
   a) O(n)
   b) Ω(n)
   c) Θ(n)
   d) O(n^2)

9. Which of the following is an example of a divide-and-conquer algorithm?
   a) Binary search
   b) Depth-first search
   c) Huffman coding
   d) Minimum spanning tree

10. What is the divide-and-conquer strategy?
    a) Breaking a problem down into smaller subproblems and solving each subproblem recursively
    b) Iterating through a list of elements to find a specific value
    c) Sorting a list of elements in ascending order
    d) None of the above

11. Which of the following is an example of a greedy algorithm?
    a) Longest common subsequence
    b) Depth-first search
    c) Huffman coding
    d) Merge sort

12. What is the time complexity of Huffman coding?
    a) O(n)
    b) Ω(n)
    c) Θ(n)
    d) O(n log n)

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Analysis and Design of Algorithms -Test 2

13. Which of the following is an example of a dynamic programming problem?
    a) Binary search
    b) Matrix chain multiplication
    c) Quick sort
    d) Depth-first search

14. What is the time complexity of breadth-first search?
    a) O(n)
    b) Ω(n)
    c) Θ(n)
    d) O(n log n)

15. Which of the following is an example of a graph algorithm?
    a) Binary search
    b) Merge sort
    c) Breadth-first search
    d) Quick sort

16. Which notation is commonly used to represent the space complexity of an algorithm?
    a) O(n)
    b) Ω(n)
    c) Θ(n)
    d) O(1)

17. Which of the following is an example of a divide-and-conquer algorithm?
    a) Huffman coding
    b) Minimum spanning tree
    c) Depth-first search
    d) Breadth-first search

18. What is the time complexity of matrix chain multiplication?
    a) O(n)
    b) Ω(n)
    c) Θ(n)
    d) O(n^3)

19. Which of the following is an example of a greedy algorithm?
    a) Longest common subsequence
    b) Minimum spanning tree
    c) Merge sort
    d) Quick sort

20. What is the time complexity of binary search in the worst case?
    a) O(n)
    b) Ω(n)
    c) Θ(n)
    d) O(log n)

Roll No:			**Marks**	
1	**2**	**3**	**4**	**5**
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IIPS DAVV Second Internal Test M.Tech. 6 Sem
Analysis and Design of Algorithms -Test 2

Answer Key

1. a) A set of instructions to perform a task
2. d) All of the above
3. b) To optimize their performance
4. a) Longest common subsequence
5. c) Depth-first search
6. d) O(log n)
7. d) O(n log n)
8. d) O(n^2)
9. a) Binary search
10. a) Breaking a problem down into smaller subproblems and solving each subproblem recursively
11. c) Huffman coding
12. d) O(n log n)
13. b) Matrix chain multiplication
14. a) O(n)
15. c) Breadth-first search
16. d) O(1)
17. b) Minimum spanning tree
18. d) O(n^3)
19. b) Minimum spanning tree
20. d) O(log n)

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SET-B

1. _____ is the process of finding the solution to a problem step by step.
2. The time complexity of an algorithm is denoted by _____.
3. _____ is an example of a dynamic programming problem.
4. In the _____ approach, a problem is divided into smaller subproblems and solved recursively.
5. The _____ algorithm finds the shortest path between two nodes in a graph.
6. The _____ algorithm is used to traverse a graph in a depth-first manner.
7. The _____ algorithm is used to traverse a graph in a breadth-first manner.
8. The time complexity of binary search is _____.
9. The time complexity of merge sort is _____.
10. The time complexity of quicksort is _____.
11. In the _____ algorithm, the input sequence is divided into two parts and the search is continued in the part where the key may be found.
12. _____ is a type of algorithm that always selects the best possible choice at each step.
13. _____ is a coding technique used to compress data without losing any information.
14. _____ is an algorithm that finds the minimum weight spanning tree of a graph.
15. The time complexity of the Huffman coding algorithm is _____.
16. The time complexity of the minimum spanning tree algorithm is _____.
17. The time complexity of the longest common subsequence problem is _____.
18. The time complexity of the matrix chain multiplication problem is _____.
19. The notation used to describe the upper bound on the running time of an algorithm is _____.
20. The notation used to describe the lower bound on the running time of an algorithm is _____.

Match the Column:

1.Binary Search	a. Greedy Algorithm
2.Depth-First Search	b. Divide-and-Conquer Algorithm
3.Breadth-First Search	c. Dynamic Programming Problem
4.Merge Sort	d. Algorithmic Notation
5.Quick Sort	e. Graph Algorithm
6.Huffman Coding	f. Compression Technique
7.Minimum Spanning Tree	g. Time Complexity
8.Upper Bound on Running Time	h. Lower Bound on Running Time
9.Longest Common Subsequence	i. Matrix Multiplication Problem
10.Big O Notation	j. Omega Notation

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Analysis and Design of Algorithms -Test 2

Answer Key

1. Iteration
2. Big O notation
3. Longest common subsequence
4. Divide-and-conquer
5. Dijkstra's algorithm
6. Depth-first search
7. Breadth-first search
8. O(log n)
9. O(n log n)
10. O(n log n)
11. Binary search
12. Greedy algorithm
13. Huffman coding
14. Minimum spanning tree
15. O(n log n)
16. O(m log n)
17. O(mn)
18. O(n^3)
19. Big O notation
20. Omega notation

Match the Column:

1. Binary Search - a. Divide-and-Conquer Algorithm
2. Depth-First Search - e. Graph Algorithm
3. Breadth-First Search - e. Graph Algorithm
4. Merge Sort - b. Divide-and-Conquer Algorithm
5. Quick Sort - b. Divide-and-Conquer Algorithm
6. Huffman Coding - a. Greedy Algorithm, f. Compression Technique
7. Minimum Spanning Tree - a. Greedy Algorithm
8. Upper Bound on Running Time - g. Time Complexity
9. Longest Common Subsequence - c. Dynamic Programming Problem
10. Big O Notation - d