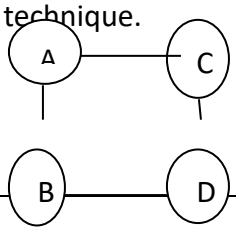
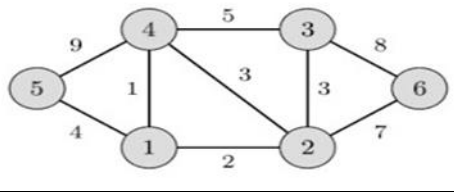
Q.No	Question
1.	Define Big oh notation
2.	Compute upper bound of running time of a linear function f(n) = 6n + 3
3.	List the searching and sorting techniques under divide and conquer technique
4.	List the time complexity for merge sort for all three cases.
5.	List the formula for calculating C11 and C12 in strassen matrix multiplication
6.	Infer pseudocode for find operation.
7.	List the applications of backtracking.
8.	Prove that 2 queen and 3queens problem are not giving solution
9.	Define chromatic number in graph coloring with some example
10.	Define disjoint set with example
11.	Compare bottom up and top down approach in dynamic programming.
12.	Construct the optimal binary tree for elements {10, 20, 30}
13.	Compare 0/1 and fractional knapsack problem (any two points)
14.	Define reliability design? Why we are copying the devices.
15.	What is meant by travelling salesman problem with example?
16.	Outline the algorithm for greedy method
17.	Compare 0/1 and fractional knapsack
18.	Identify the time complexity of prims algorithm
19.	List the conditions of dijkstra algorithm
20.	What is meant by minimum spanning tree?
21.	Define Branch and Bound technique
22.	List the possible paths in a graph having vertices{A,B,C,D} where A is the starting place

23.	Utilize NP complete and Identify its condition?
24.	When a problem is said to be NP-hard?
25.	Define NP-hard.

Long questions:

Q.No	Question
1.	Explain in detail about time and space complexity.
2.	Analyze the time complexity of binary search and search the element **4** from the following elements **10,3,9,2,1,4,5,6**
3.	Analyze the time complexity of quick sort and sort the following elements and explain it with step by step **10,3,4,6,7,5,2,1**
4.	Explain in detail about asymptotic notations
5.	Using Starassan matrix multiplication calculate the following matrices A= 5 4 B= 1 2 3 2 4 3
6.	Explain about disjoint set operations with example
7.	Apply backtracking technique for queens problem technique on 8*8 board and find solution.
8.	Construct state space tree and solve the following problem using sum of subset where set S={10, 12, 13, 15, 18} and M=30
9.	Analyze the following graph, check the various assignment of colors to vertices using graph coloring technique. check the chromatic number 

<table>
<tr><td>10.</td><td>Explain in detail about working procedure of backtracking with example.</td></tr>
<tr><td>11.</td><td>Apply dynamic programming technique for optimal binary search tree where the keys are {10,20,30,40} and its frequency is{4,2,6,3} respectively.</td></tr>
<tr><td>12.</td><td>Explain in detail about 0/1 knapsack problem using dynamic programming with example</td></tr>
<tr><td>13.</td><td>Analyze the Floyd Warshall algorithm with an example.</td></tr>
<tr><td>14.</td><td>Explain a state space tree for travelling salesman problem using dynamic programming technique with its relevant formula.</td></tr>
<tr><td>15.</td><td>Create the floor value for each and every device whose cost and reliability is mentioned below where the cost of overall system is 105$.
<table>
<tr><td>Device</td><td>Cost</td><td>Reliablity</td></tr>
<tr><td>D1</td><td>30</td><td>0.9</td></tr>
<tr><td>D2</td><td>15</td><td>0.8</td></tr>
<tr><td>D3</td><td>20</td><td>0.5</td></tr>
</table></td></tr>
<tr><td>16.</td><td>Identify the optimal schedule that gives maximum profit and also identify whether all the jobs completed in optimal schedule.
<table>
<tr><td>Jobs</td><td>J1</td><td>J2</td><td>J3</td><td>J4</td><td>J5</td><td>J6</td></tr>
<tr><td>Deadline</td><td>5</td><td>3</td><td>3</td><td>2</td><td>4</td><td>2</td></tr>
<tr><td>Profit</td><td>200</td><td>180</td><td>190</td><td>300</td><td>120</td><td>100</td></tr>
</table></td></tr>
<tr><td>17.</td><td>Construct minimum spanning tree using kruskal algorithm

</td></tr>
</table>

18.	Explain about 0/1 knapsack problem using greedy method with example
19.	Distinguish between kruskal and prims algorithm for finding minimum spanning tree.
20.	Explain Dijkstra algorithm by choosing any example.
21.	Illustrate algorithm for LC Search
22.	Explain in detail about FIFO Branch and Bound technique
23.	Identify an algorithm for knapsack using Branch and Bound technique and explain.
24.	Prove travelling salesman problem is NP Complete
25.	Make use of cooks theorem and discuss the three types of SATs.