1. Mention the characteristics of an algorithm.

2. Define the terms:

i. space complexity   ii.Time complexity

3. Write the time complexities of

I. Binary search ii.Merge sort

4. Write the control abstraction of divide and conquer.

5. Define minimum cost spanning tree.

6. Mention two different ways to represent a graph.

7. What is meant by an optimal solution?

8. Define the terms related to graphs.

I. Cycle   ii.Degree of a node

9. State the travelling salesman problem.

10. What is sum of subset problem?

11. State the N-Queens problem.

12. Define the terms:

I. Binary tree   ii. Complete Binary tree.

SECTION-B

II. Answer any five questions. Each carries 10 marks.   (5 X 10 =50)

13. Explain Asymptotic Notations with example.

14. Write an algorithm to find maximum and minimum in a set of members using divide and conquer technique. Explain with an example.

15. Write a recursive binary search algorithm. Explain with an example.

16. Write prims algorithm. Find the minimum cost spanning tree by Prims algorithm.
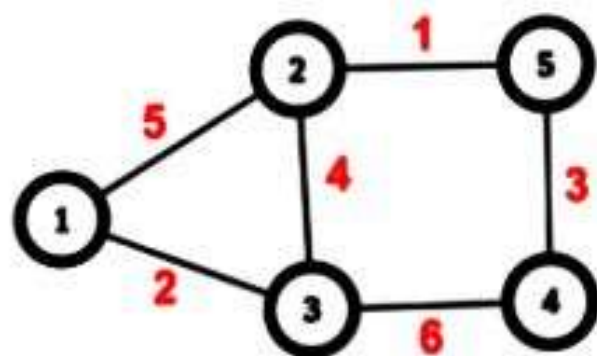
17. Find the shortest distance from node 1 to all other nodes uisng Dijikstras algorithm.
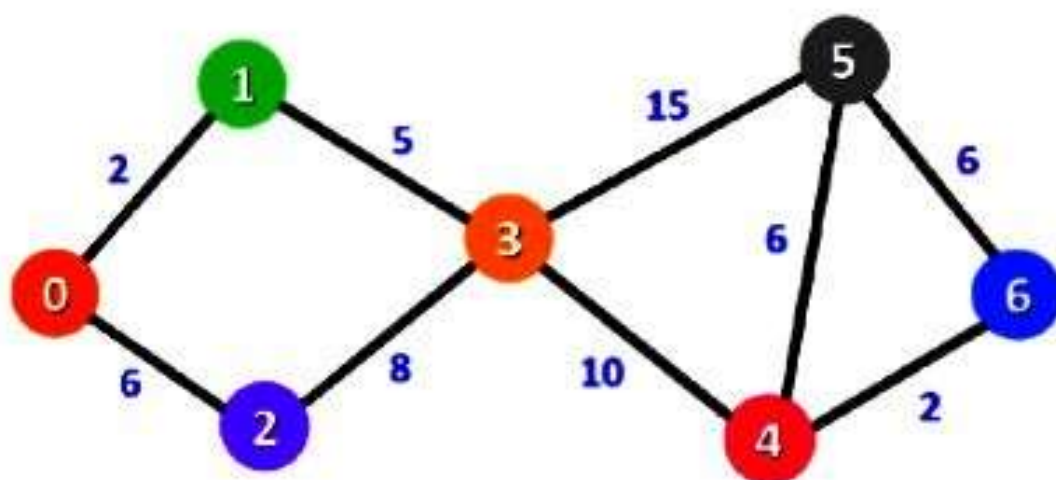
18. a. Write merge sort algorithm to sort a set of numbers in ascending order.

b. Trace the merge sort algorithm to sort the following elements.

41, 32, 11, 92, 66,74,87,38.

19. Write recursion algorithm for pre-order traversal and apply it to the following complete binary tree.