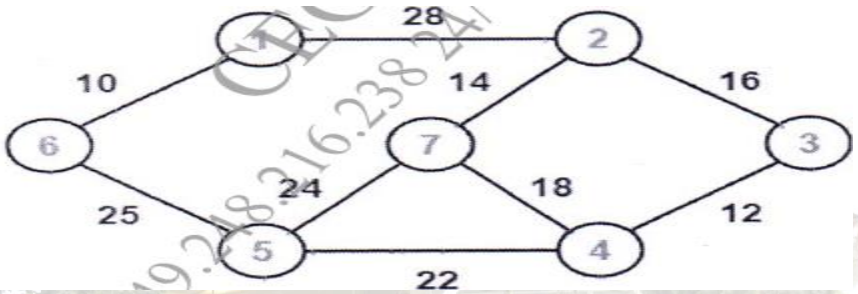
Mumbai Education Trust's

INSTITUTE OF ENGINEERING, NASHIK.

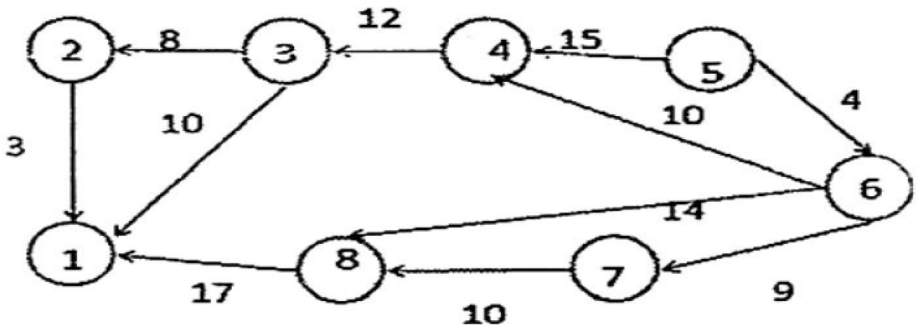
COMPUTER ENGINEERING DEPARTMENT

Subject : DSA **ASSIGNMENT NO – 03** **Unit - III**

1. Define **Basic Terminologies of Graph** with example.
2. Write non-recursive pseudo for Depth First Search (DFS)
3. Write an algorithm for depth first traversal & Breadth First Traversal of a graph.
4. Write Kruskal's algorithm for minimum spanning trees and explain with example.
5. Construct the minimum spanning tree (MST) for the given graph using Prim's Algorithm staring from vertex 6.

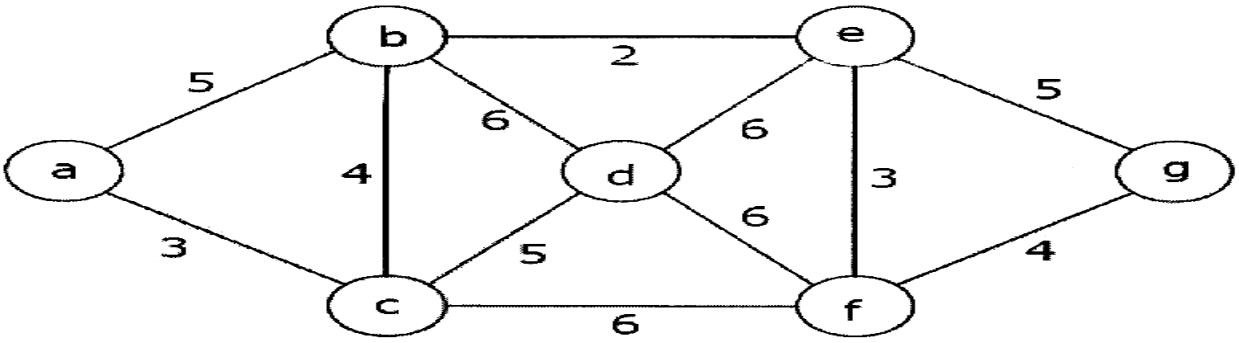


6. Explain the following terms of the below given graph :
   (*i*) In degree of and out degree of each vertex.
   (*ii*) Adjancy list representation.

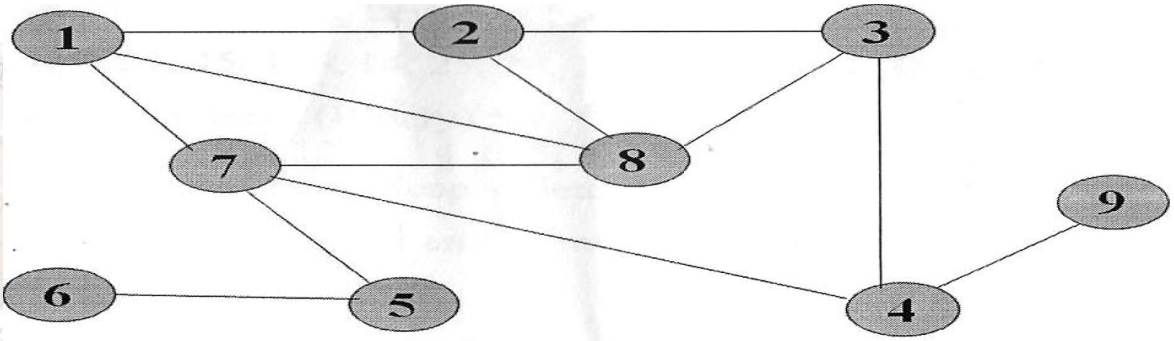


7. **Draw any directed graph with minimum 6 nodes and represent graph using adjacency matrix, adjacency list, adjacency multilist and inverse adjacency list.**

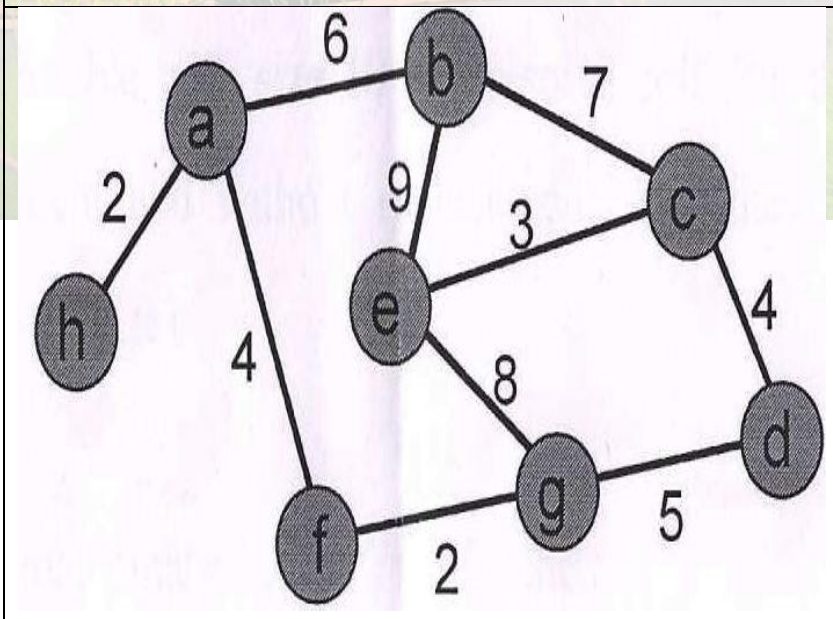
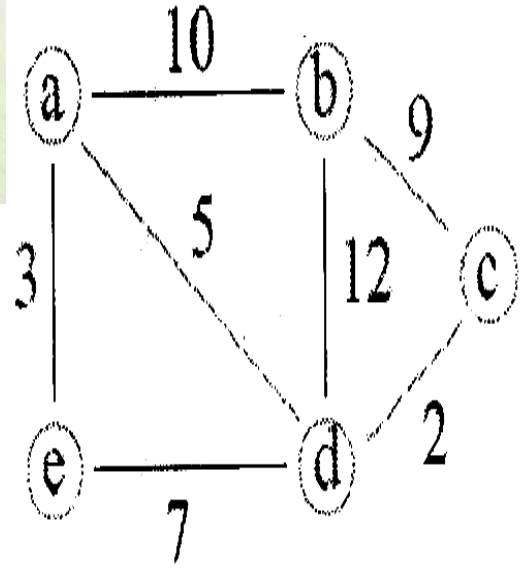
8. Consider the given graph and find the shortest path by using Dijkshtra's Algo from a to g.



9. Define DFS and BFS for a graph. Show BFS and DFS for the following graph with starting vertex as 1.



10. **Find the MST for the graph given using Kruskals Algorithm and show all the Step**.

Example 1 :	**Example 2 :**
	

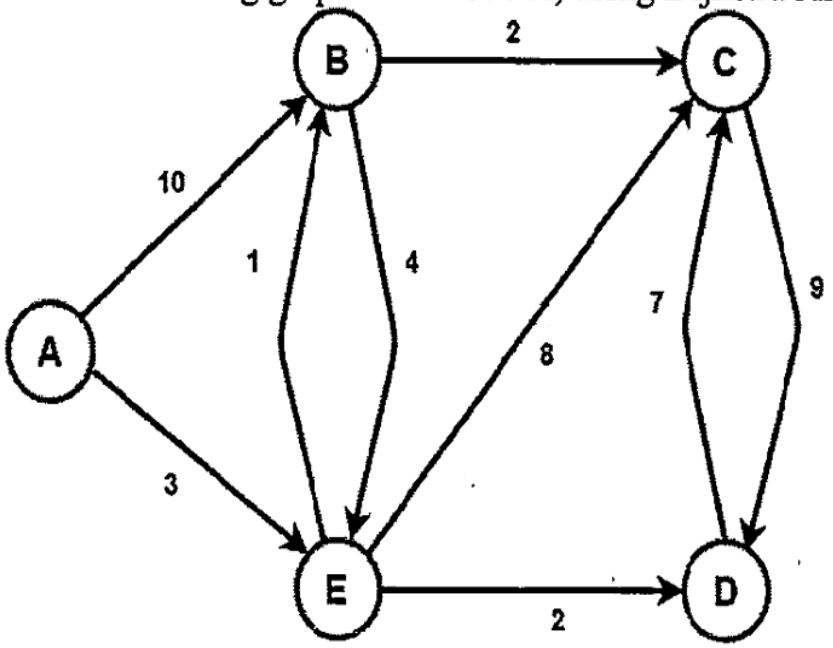
11. Consider the graph represented by the following adjacency matrix :

And find minimum spanning tree of this graph using Prim's algorithm.

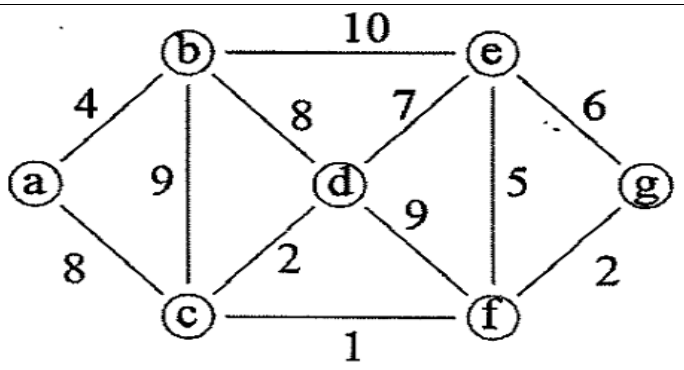
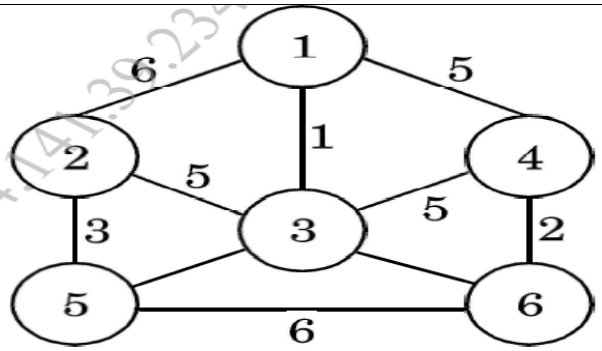
	1	2	3	4	5	6
1	0	3	1	6	0	0
2	3	0	5	0	3	0
3	1	5	0	5	6	4
4	6	0	5	0	0	2
5	0	3	6	0	0	6
6	0	0	2	2	6	0

12.

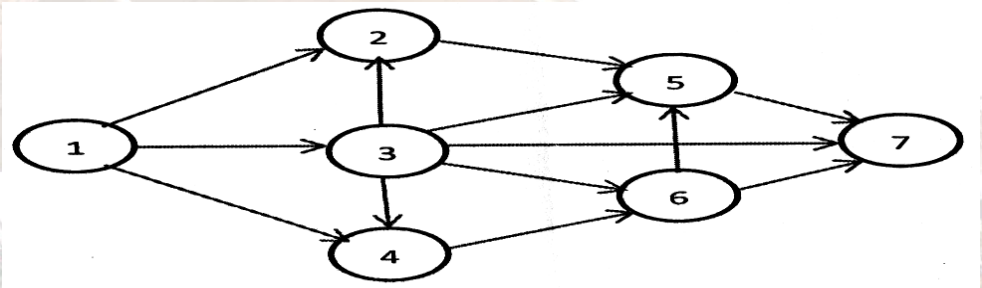
Find the shortest path in the following graph from node A, using Dijkstra Algorithm.



13. **Construct MST from the given data using Prims Algorithms.**

Example 1:	**Example 2:**
	

14. Explain topological ordering ? List their applications. Find the topological sorting of a given graph.



15.

Consider the graph represented by the following adjacency matrix

	1	2	3	4	5	6
1	0	6	1	5	0	0
2	6	0	5	0	3	0
3	1	5	0	5	6	4
4	5	0	5	0	0	2
5	0	3	6	0	0	6
6	0	0	4	2	6	0

Find minimum spanning tree of this graph using prim's Algorithm.

********** **Best of Luck** **********