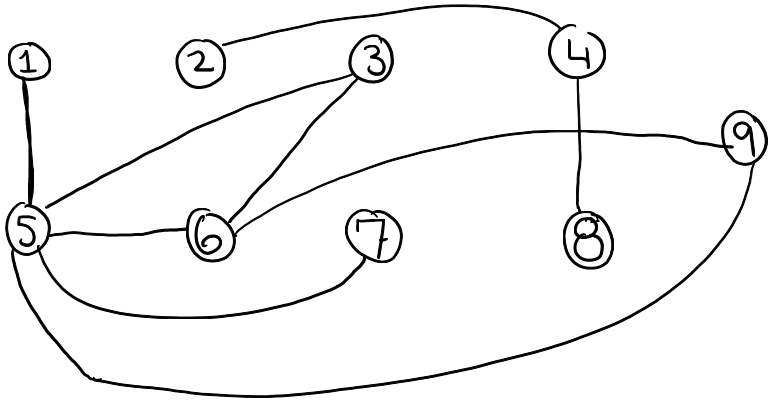
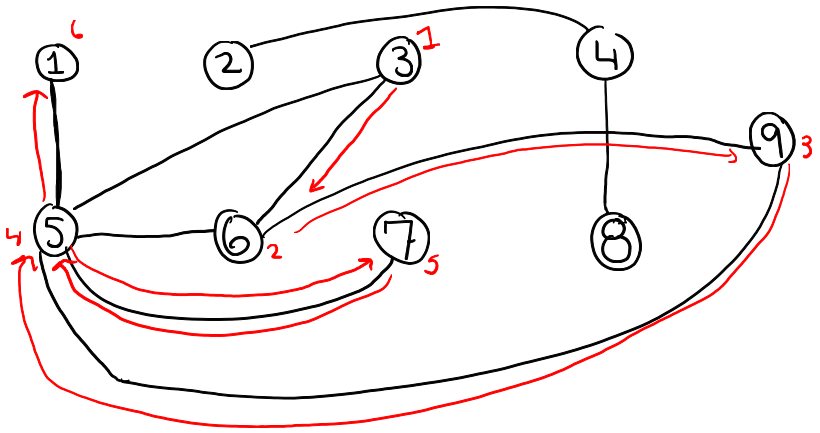
2. a)

Draw Graph:



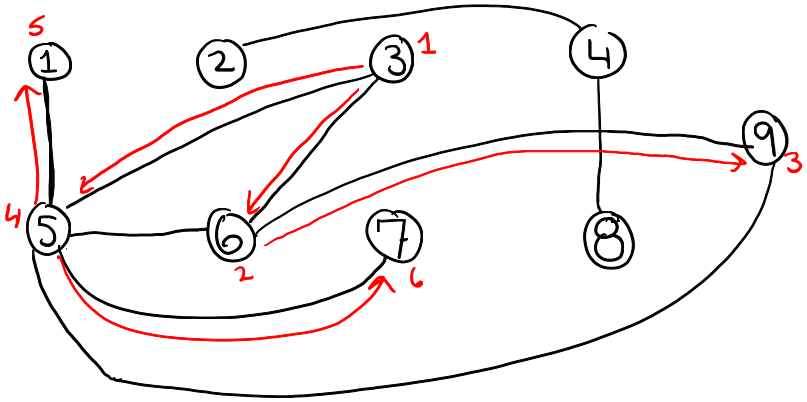
DFS - Traversal:



- 3 → Select 6
- 6 → Select 9
- 9 → Select 5
- 5 → Select 7
- 7 → Backtrack to 5
- 5 → Select 1
- 1 → Backtrack to 3

All selected.

BFS Traversal :



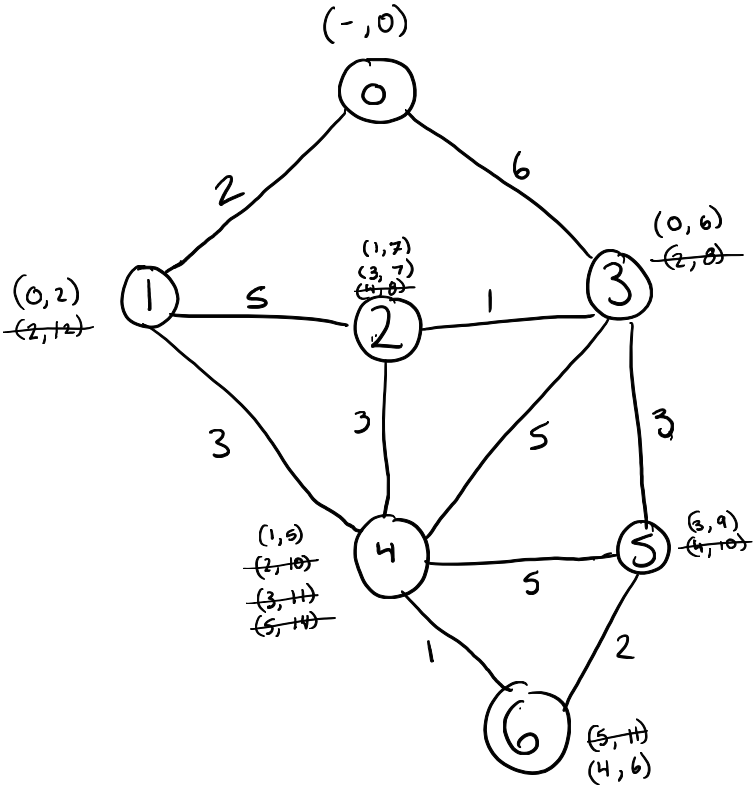
Queue

Step	
1	6, 5
2	5, 9
3	9, 1, 7
4	1, 7
5	7
6	
7	
8	

Steps :

1. enqueue node 6 & 5
2. visit 6
3. Enqueue node 9
4. visit node 5
5. Enqueue node 1 & 7
6. visit node 9
7. visit node 1
8. visit node 7

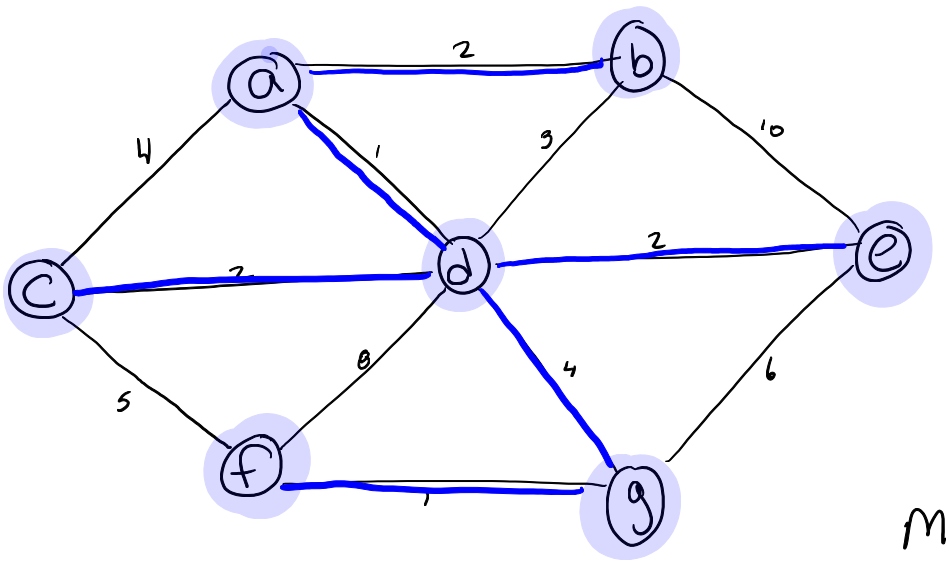
b)



Path	Length
0	0
0 → 1	2
0 → 1 → 2	7
0 → 3	6
0 → 1 → 4	5
0 → 3 → 5	9
0 → 1 → 4 → 6	6

c)

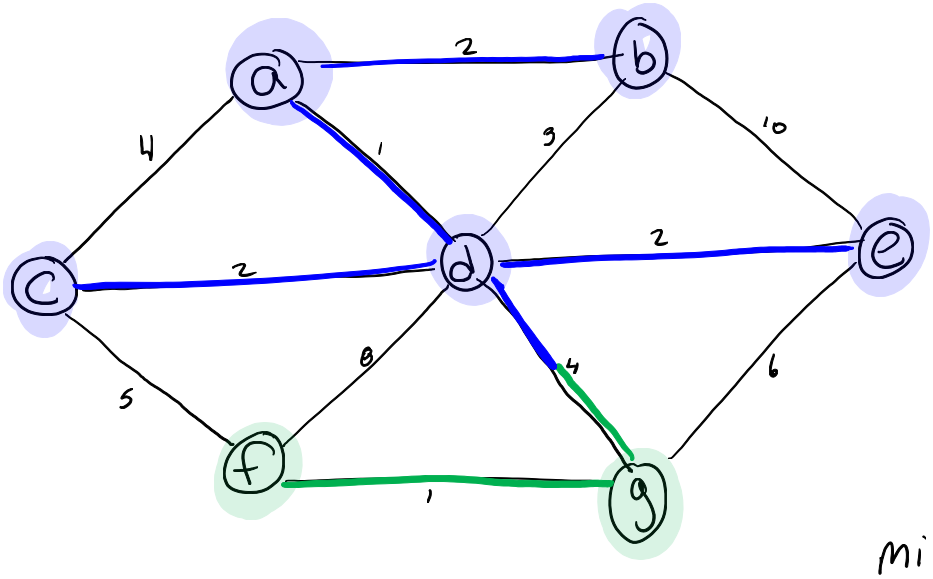
Prim's Algorithm:



Steps

1. start at (A)
2. go to (d) ← (A)
3. go to (e) ← (d)
4. go to (c) ← (d)
5. go to (b) ← (A)
6. go to (f) ← (g)
7. go to (b) ← (A)
8. Done

Minimum Spanning tree indicated in Blue



Steps:

1. Connect Nodes A & d As they have edge weight 1
2. Connect Nodes f & g As they have edge weight 1
3. Connect Nodes A & b and c & d and d & e As they all have edge weight 2
4. connect Nodes d & g connecting cluster 1 and 2 As they have edge weight 4.

Minimum Spanning tree indicated in green and blue

● - cluster 1

● - cluster 2

Both methods arrive at same Minimum Spanning trees

∴ Both methods are Valid.