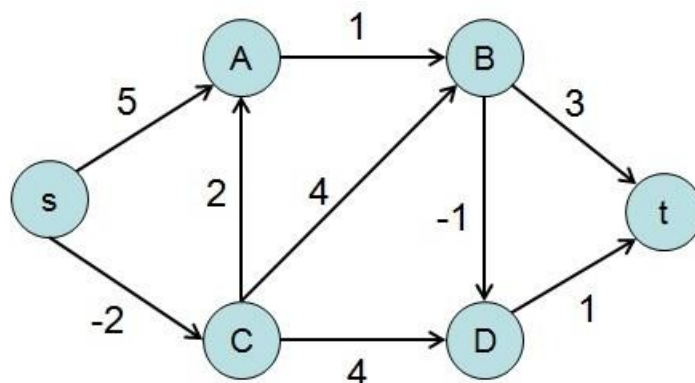
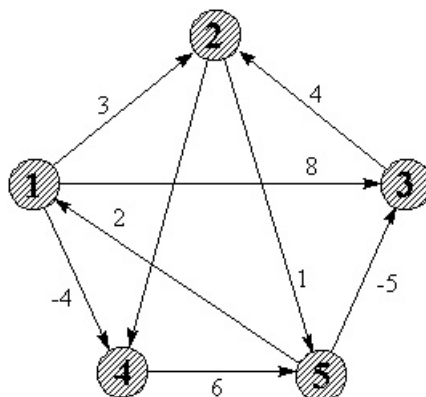


Assignment-II

1. Using Bellman Ford algorithm, find the shortest path between S and all other vertices.



2. Using Floyd-Warshall algorithm, find the shortest path between all pair of vertices.



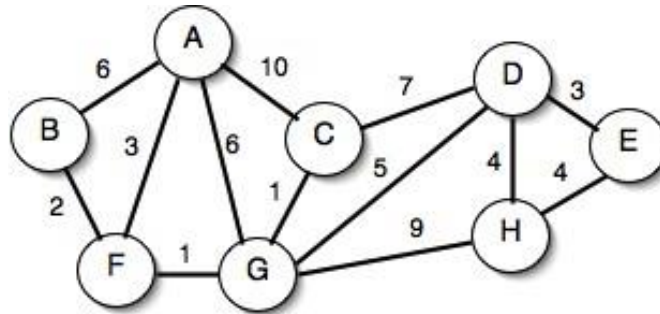
3. Prove that the following are equivalent for an n -vertex graph T .

- T is a tree.
- T is connected and has no cycles.
- For $u, v \in V(T)$, T has exactly one $u - v$ path.
- T is connected and has exactly $n - 1$ edges.
- T is connected, but $T - e$ is disconnected for every edge e .
- T has no cycle, but $T + xy$ does, for any two non-adjacent vertices $x, y \in V(T)$.
- T has $n - 1$ edges and no cycles.

4. Show that there are n^{n-2} labelled trees with n vertices, $n \geq 2$.

5. Define a spanning tree of a graph. Find three spanning tree in the Peterson graph.

6. Show that a Hamiltonian path in a graph is a spanning tree.
7. Prove/Disprove that every spanning tree is a hamiltonian path.
8. Find the minimum spanning tree using Prim's and Kruskal's Algorithm .



9. Describe Traveling Salesman problem and Chinese Postman Problem. Give examples for both. Also, mention the main differences among the two.