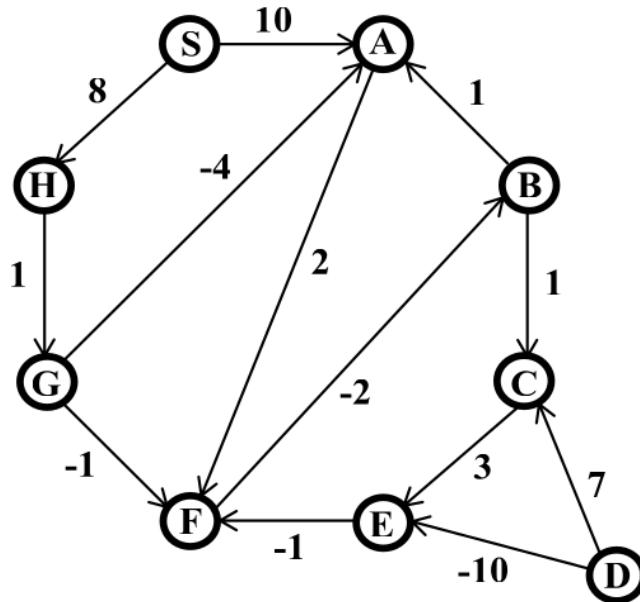


Observe the following graph:



- Q.1 Which shortest path algorithm will be suitable for this graph and why? Find out all the shortest paths from source ‘S’ to all other vertices of this graph. Complete all the iterations and show the state of the graph after each iteration. Finally, show the shortest path tree that you have found. [06] [CLO3]
- Q.2 i. Suppose you have a graph with 100 vertices, but the shortest paths are all found after just 5 iterations. The standard Bellman-Ford algorithm continues for 94 more useless iterations. Propose a modification to the algorithm so that it can detect when the algorithm has finished early and terminate immediately.  
ii. Why is Breadth-First Search (BFS) insufficient for finding the shortest path in a weighted graph, even though it works for unweighted graphs? Explain with a suitable example. [04] [CLO3]