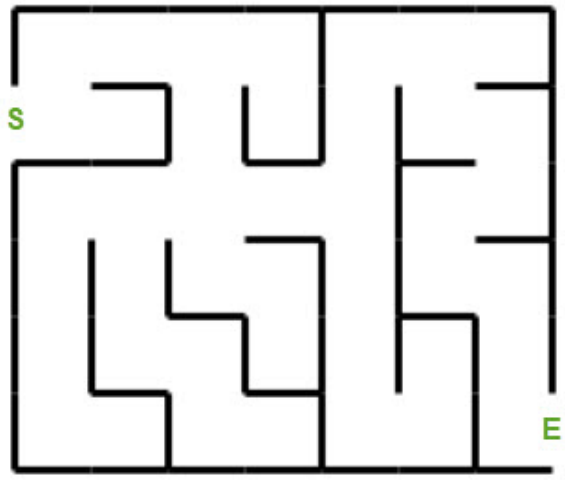
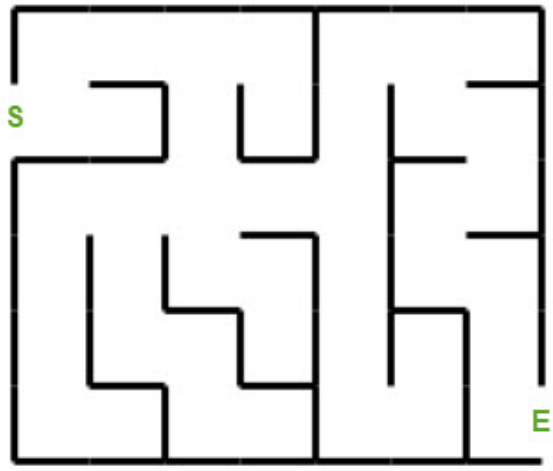
Q7. Use Bellman Ford Algorithm to find the shortest path of the following maze

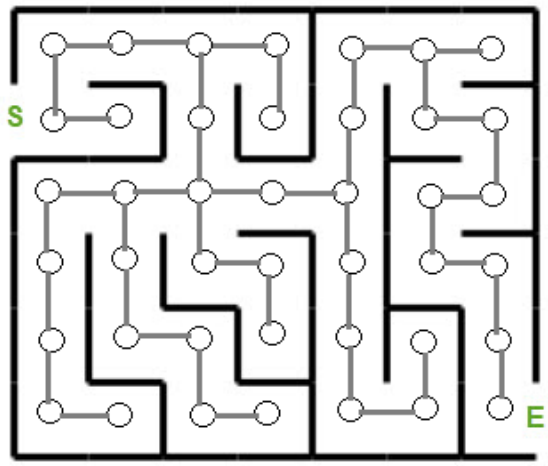


Ans:

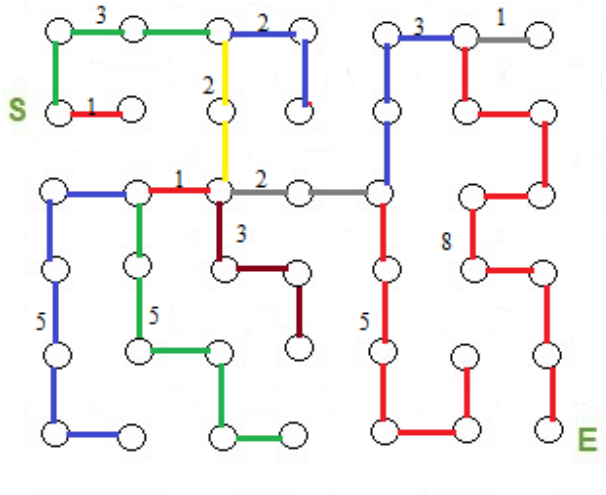
Step 1:



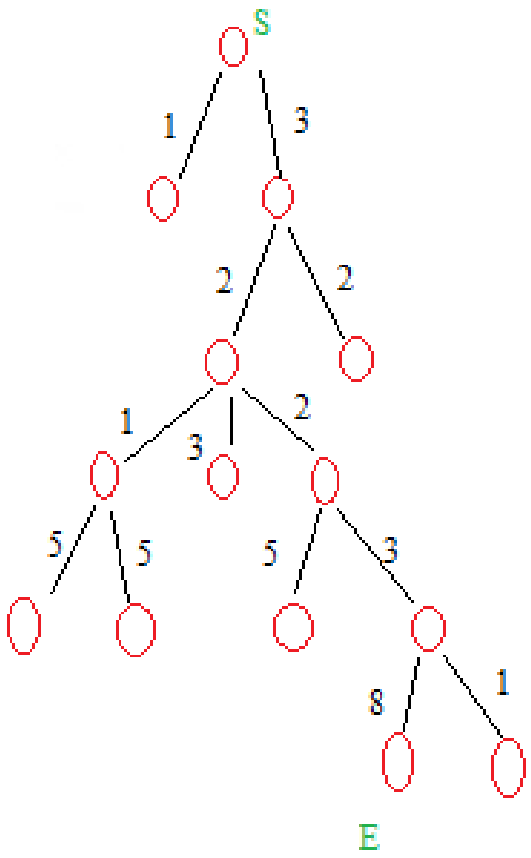
Step 2:



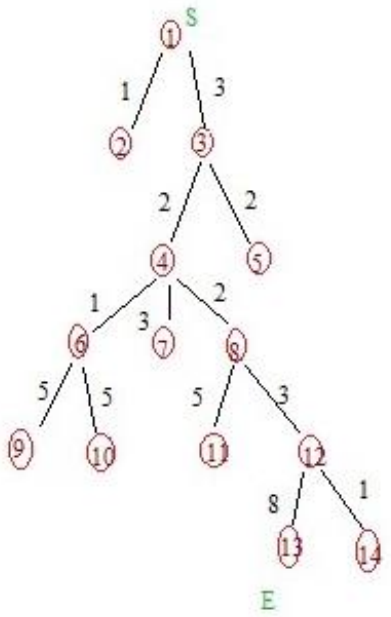
Step 4:



Step 5:



Bellman Ford Algorithm:



Step 1:

In the first step, all the vertices which are reachable from the source, S, are updated by minimum cost. Hence, vertices ***1*** and ***3*** are updated.

Step 2:

In the next step, all the vertices which are reachable from 1 and 3 are updated by minimum cost. Thus, vertices ***4***and ***5*** are updated.

Step 3:

In the next step, all the vertices which are reachable from 4 and 5 are updated by minimum cost. Thus, vertices ***6***, ***7*** and ***8*** are updated.

Step 4:

In the next step, all the vertices which are reachable from 6, 7 and 8 are updated by minimum cost. Thus, vertices ***9***, ***10***, ***11*** and ***12*** are updated.

Step 5:

In the next step, all the vertices which are reachable from 9, 10, 11 and 12 are updated by minimum cost. Thus, vertices ***13*** and ***14***are updated.

Step 6:

Hence, the minimum distance between vertex **S** and vertex **E** is **18**.
Based on the predecessor information, the path is 1→ 3→ 4→ 8→ 12→ 13