Design and Analysis of Algorithm (CS 412)
Instructor: Dr. Ayesha Enayet
Date: _____
CS 6th

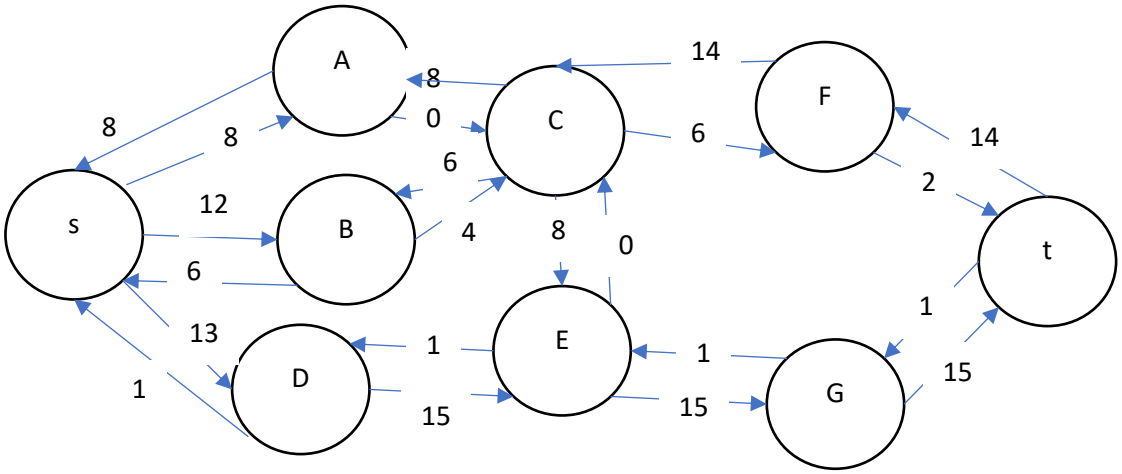
SIS ID:_____ Name:_____

Note: Attempt all the questions

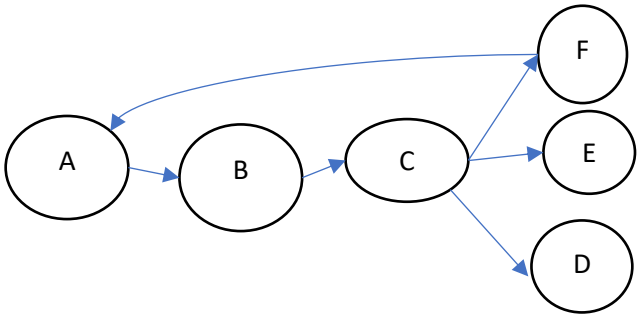
a. What does a network flow represent in the context of assembly line (manufacturing process)?
   1. Rate of material movement along the assembly line
   2. Number of workstations in an assembly line network
   3. Quantity of products processed in an assembly line
   4. Efficiency of communication between different stages in an assembly line network

b. What happens to the maximum flow if the capacity of an edge in the minimum cut is reduced to zero.
   1. The maximum flow decreases
   2. The maximum flow increases
   3. It depends on the other edge capacities in the network
   4. The maximum flow remains the same

c. Draw the residual network of the following flow network (Draw on the back side of the page):



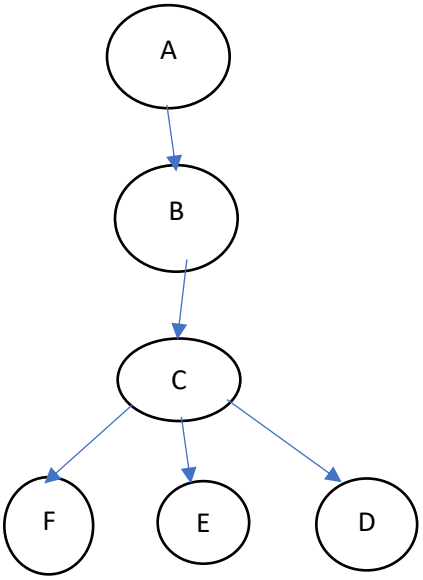
d. Identify whether the following graph is bipartite. Justify your answer.



The graph is two-colorable and bipartite.

e. Find connected components in the above graph.
   Draw the DFS forest.

DFS Forest



Connected Components

1: [A,B,C,F]

2:[E]

3:[D]