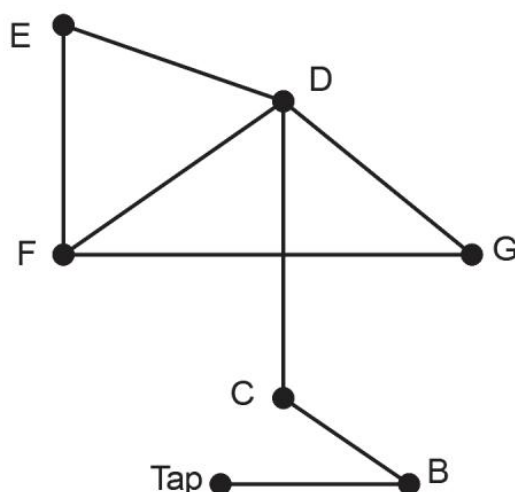


Question 3**(6 marks)**

The graph below shows the current network of reticulation pipes in Tarik's garden.



- (a) Using Euler's formula, stating the number of vertices, edges and faces, show that the graph is planar. (2 marks)

The water needs to travel from the tap and through all pipes.

- (b) List a possible route for the water. (1 mark)
- (c) What is the mathematical term for the route listed in part (b)? (1 mark)

(d) Tarik would like to increase the water pressure by removing one edge (pipe).

(i) Identify any edge that **cannot** be removed. (1 mark)

(ii) What is the name given to the type of edge identified in part (d)(i)? (1 mark)