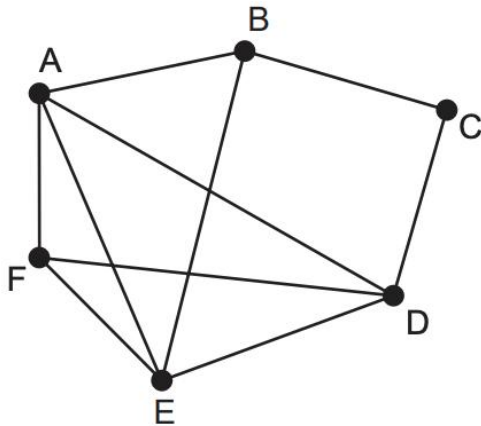


Question 12**(6 marks)**

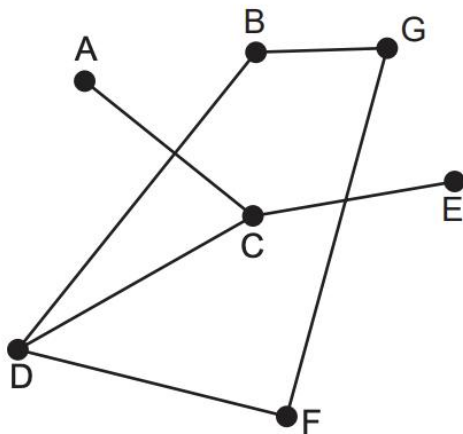
Jake, a park ranger, is giving a presentation at a National Park and Wildlife Conference on possible designs for a new park. Unfortunately, Jake made mathematical errors in his presentation about the paths (represented by edges) and shelter huts (represented by vertices) in the park.

(a) For each of the following statements, the graph drawn by Jake was incorrect. Redraw the graph to match the statement correctly.

- (i) This park plan has been drawn as a connected planar graph containing six vertices. (2 marks)



- (ii) This park plan has been drawn as a bipartite graph. (3 marks)



Jake also makes the following incorrect statement in his presentation. 'A park plan can be a complete graph with 21 paths and six shelter huts'.

- (b) If the plan must be a complete graph with 21 paths, how many shelter huts should Jake have quoted? (1 mark)