Networks - Practice test 1

Name: _____ Date: _____

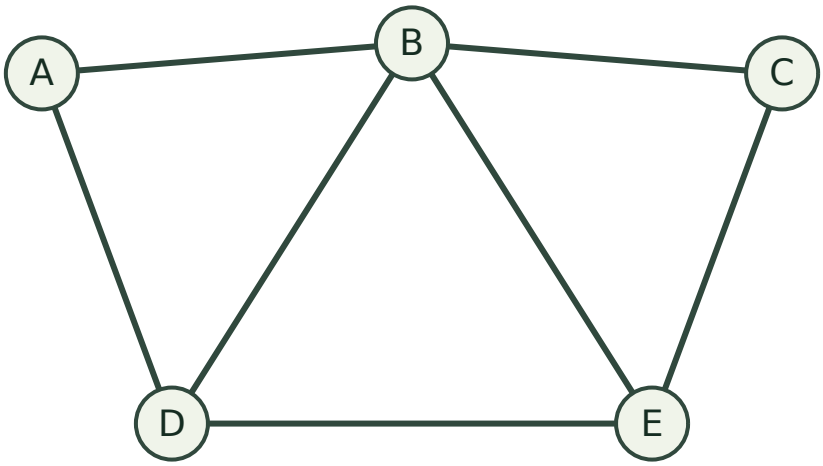
16 questions | 40 marks | 55 minutes

Identify, draw and interpret connected networks.

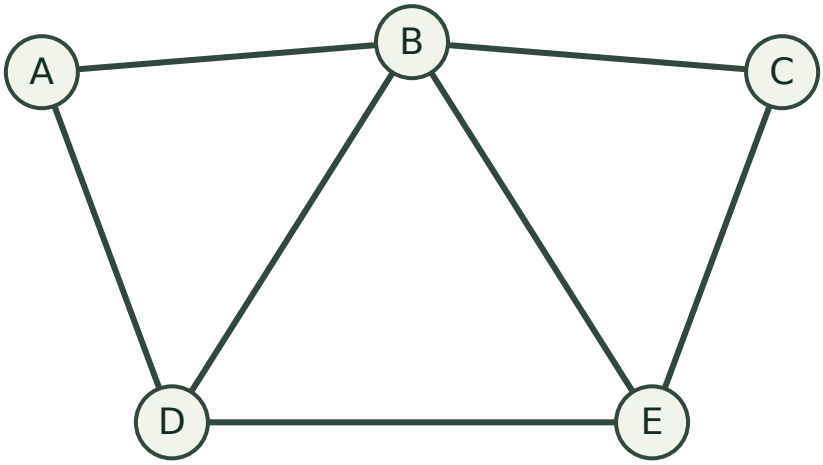
No calculator needed.

1. Define vertices and edges for a network of direct train services. [2 marks]

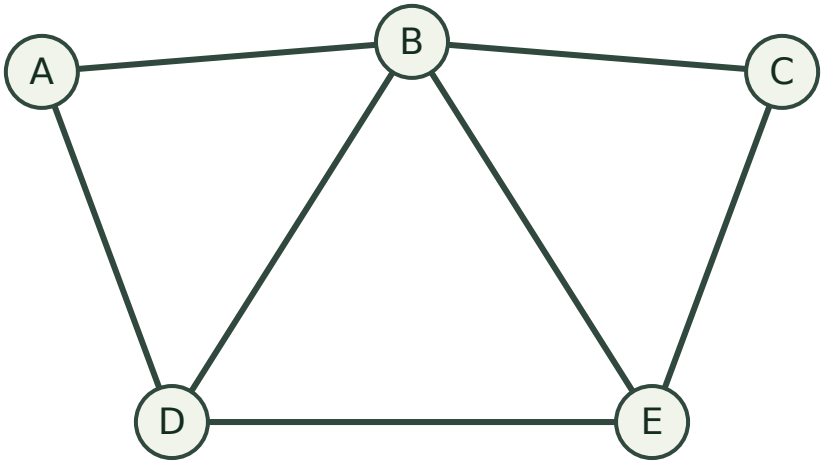
2. Count vertices and edges in the diagram. [2 marks]



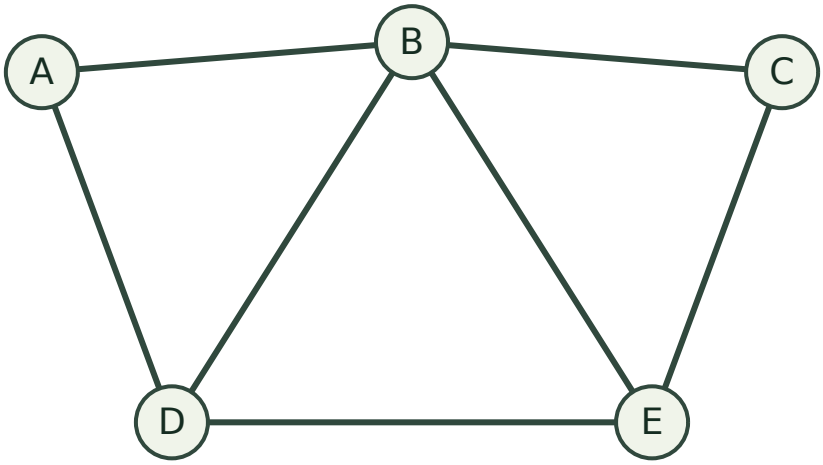
3. List all neighbours of E. [2 marks]



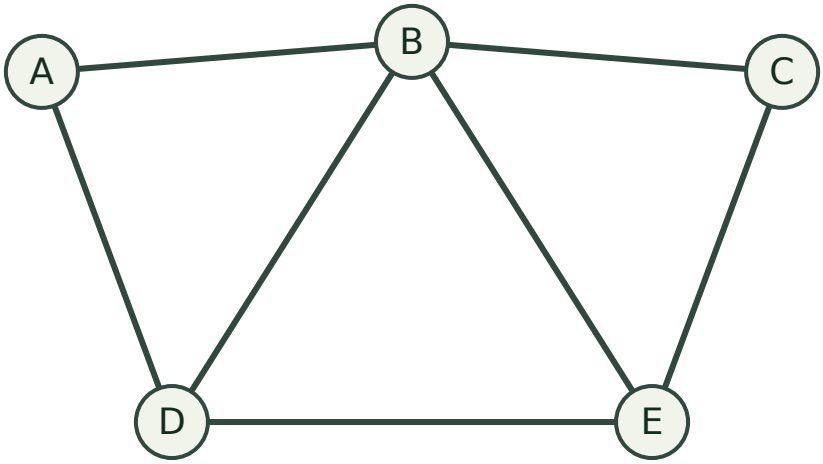
4. Find the degree of each vertex. [3 marks]



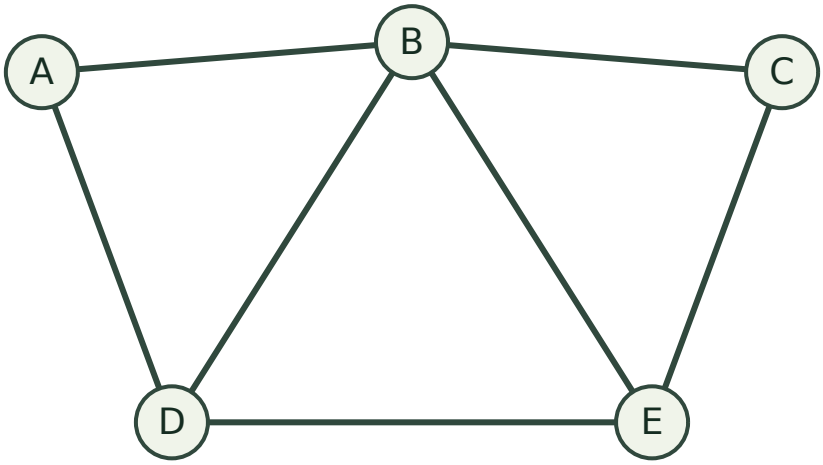
5. Use the degree sum to check the edge count. [2 marks]



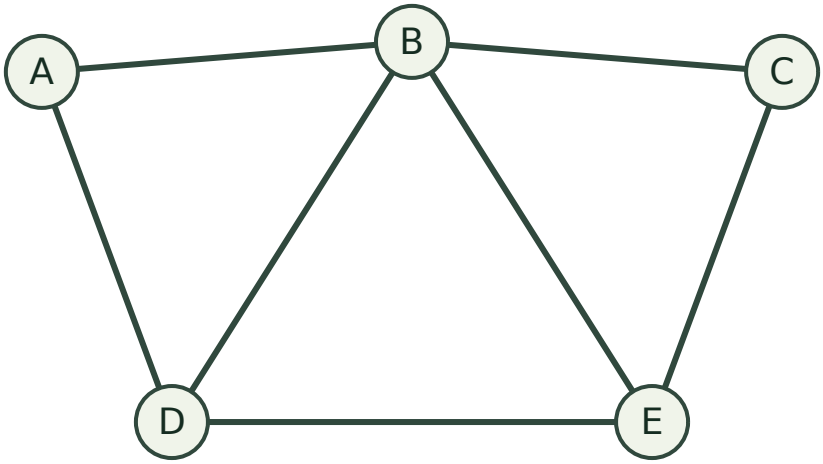
6. Is A-B-E-C a valid route? Explain. [2 marks]



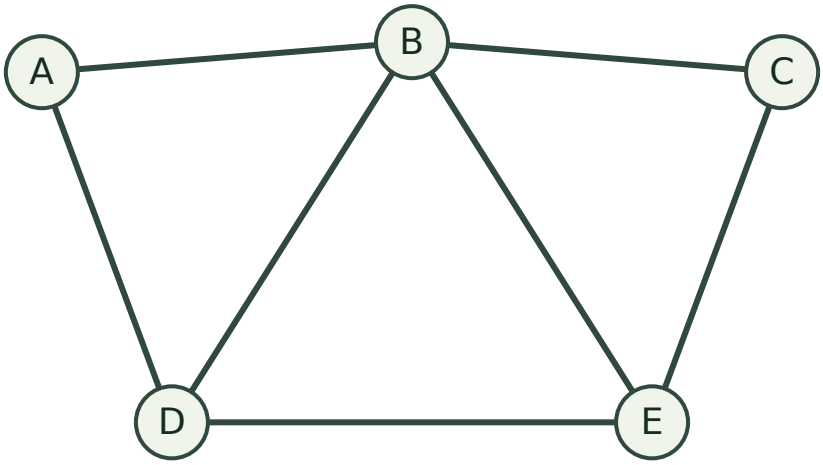
7. How many edges are used by A-D-B-C? [2 marks]



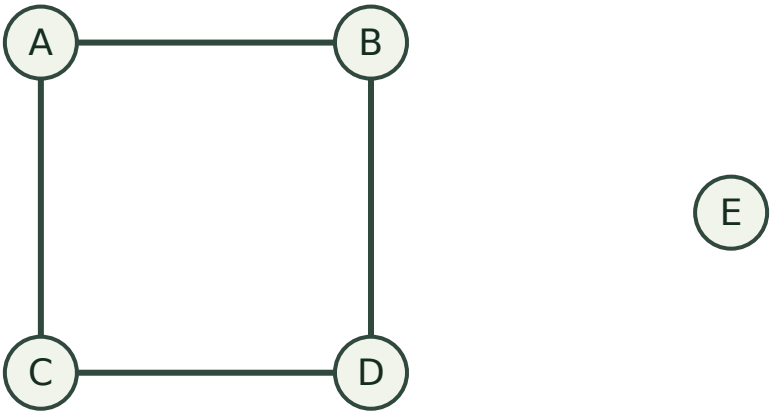
8. Is C directly linked to A? Is it reachable from A? [3 marks]



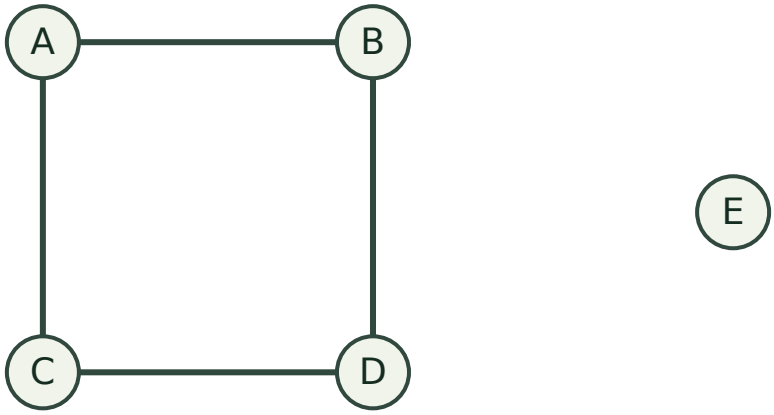
9. Remove BD. Is the resulting network connected? Justify. [3 marks]



10. Name the components in this diagram. [2 marks]



11. Add one edge to make the shown network connected. [2 marks]



12. An undirected network has degrees 1,1,2,2,4. Find the edge count. [2 marks]

13. Explain why degrees 1,1,1,2 cannot describe an undirected network. [3 marks]

14. Draw vertices P,Q,R,S with edges PQ, QR, RS, SP. [3 marks]

15. Roads AB, BC, CD form a chain. Which are bridges? [3 marks]

16. Roads AB, BC and CD form a chain. Recommend one extra road so access remains after any one road closes. Explain. [4 marks]