Networks - Applications test

Name: _____ Date: _____

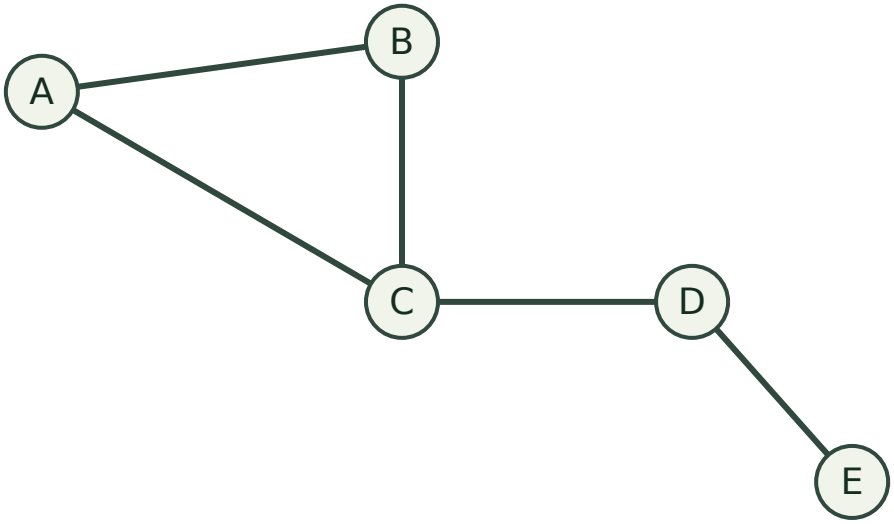
16 questions | 42 marks | 55 minutes

Justify practical access and reliability decisions.

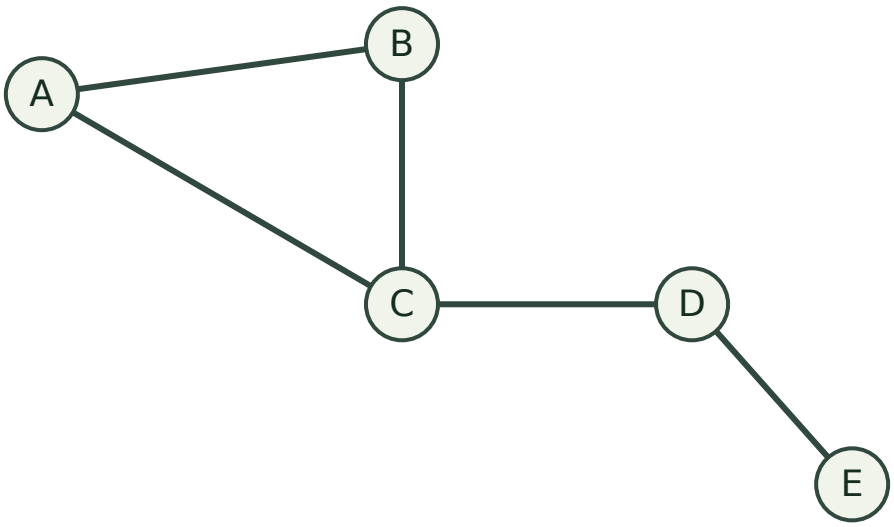
No calculator needed.

1. In a campus model, buildings are joined when a covered path directly connects them. Define vertices and edges. [2 marks]

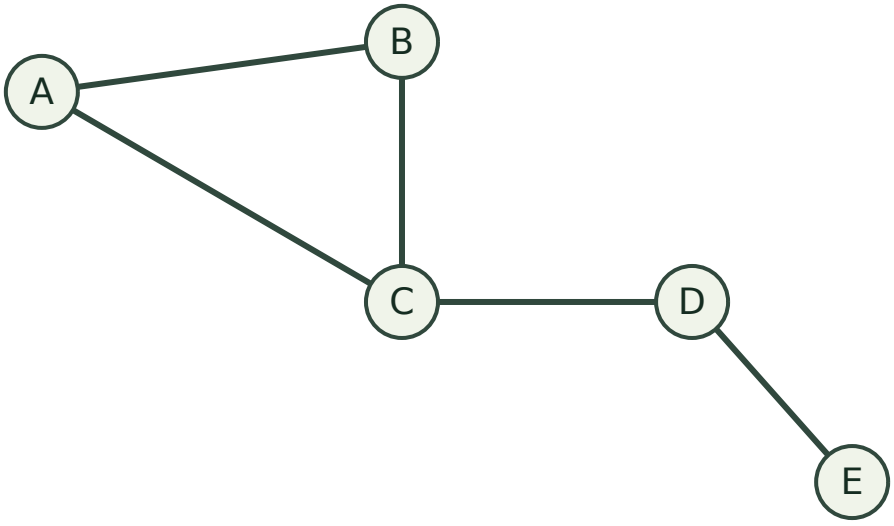
2. Edges are AB, BC, CA, CD, DE. Find degree(C). [2 marks]



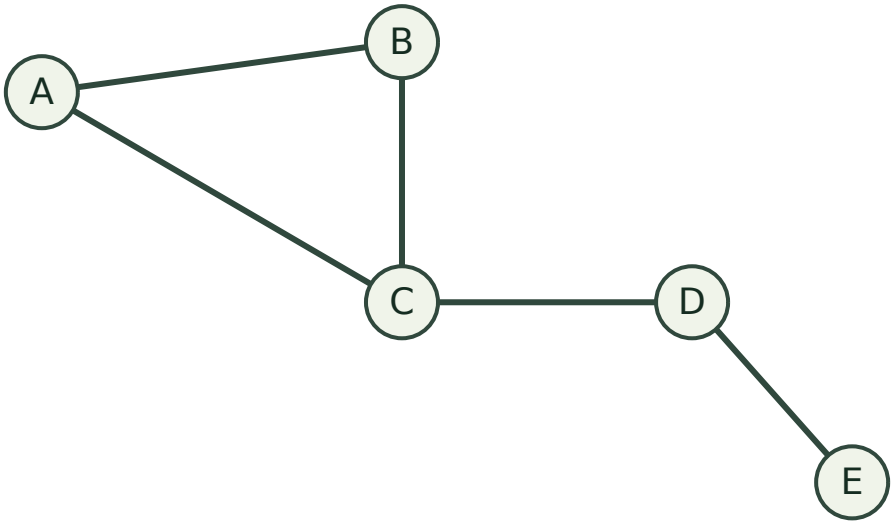
3. Count the vertices and edges in the displayed campus network. [2 marks]



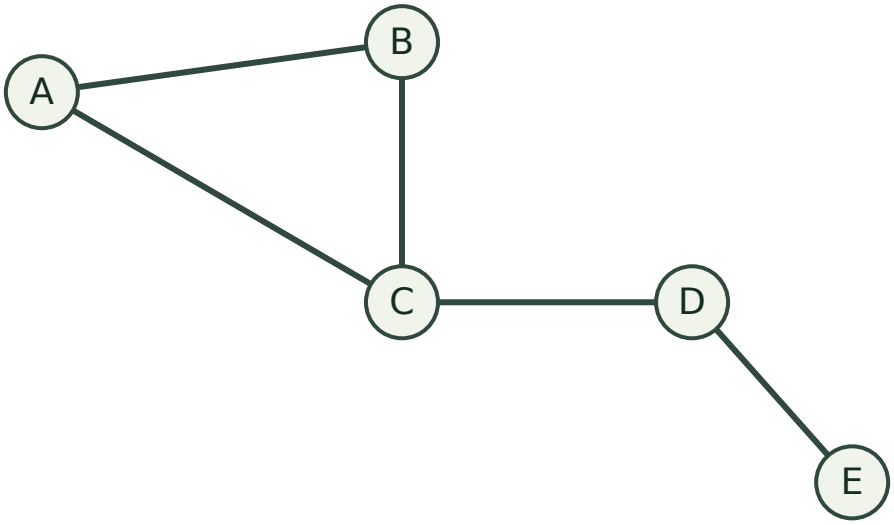
4. Give a route from B to E in the displayed network. [2 marks]



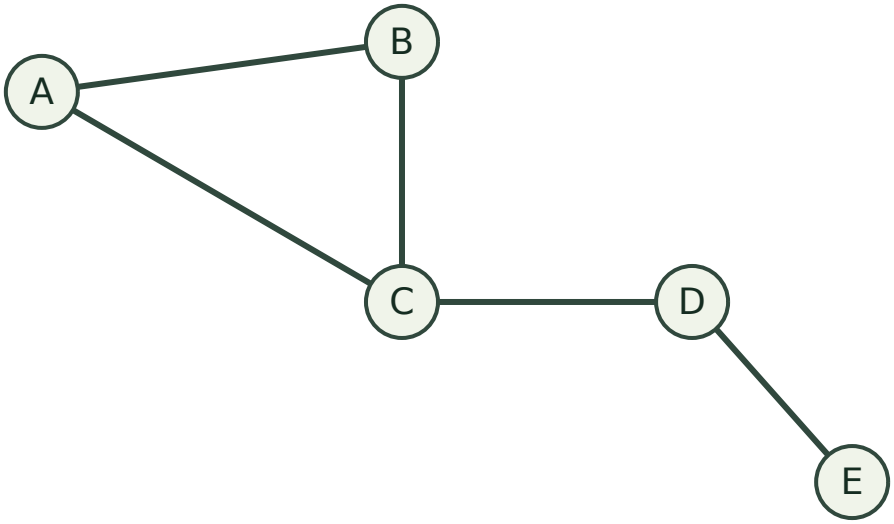
5. Which edges in the displayed network are bridges? [3 marks]



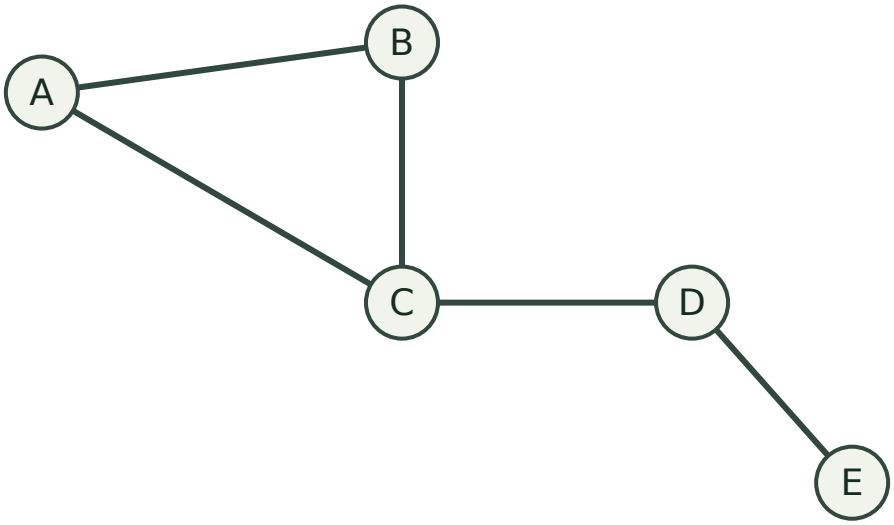
6. If CD closes in the displayed network, name the components. [2 marks]



7. Add edge BE to the displayed network. Give a route from A to D avoiding C. [3 marks]



8. Add BE to the displayed network. Explain why all vertices remain reachable after any one edge closes. [4 marks]



9. A-B-E takes 6 and 11 minutes. A-C-D-E takes 4,5,3 minutes. Compare totals. [3 marks]

10. Why can the route with more links be quicker? [2 marks]

11. A connected five-building network gains isolated vertices F and G. How many components? [2 marks]

12. A network has one connected group of five buildings and two isolated buildings F and G. What is the minimum number of new paths needed to connect them all? [3 marks]

13. A planner omits a warehouse because it has no path. Why is the model incomplete? [2 marks]

14. A draft undirected network has degree sum 17. Why does it need checking? [3 marks]

15. A direct-road network is connected. Does this prove wheelchair-accessible travel between every site? [3 marks]

16. Suggest two extra edge attributes useful for an emergency campus plan and explain their uses. [4 marks]