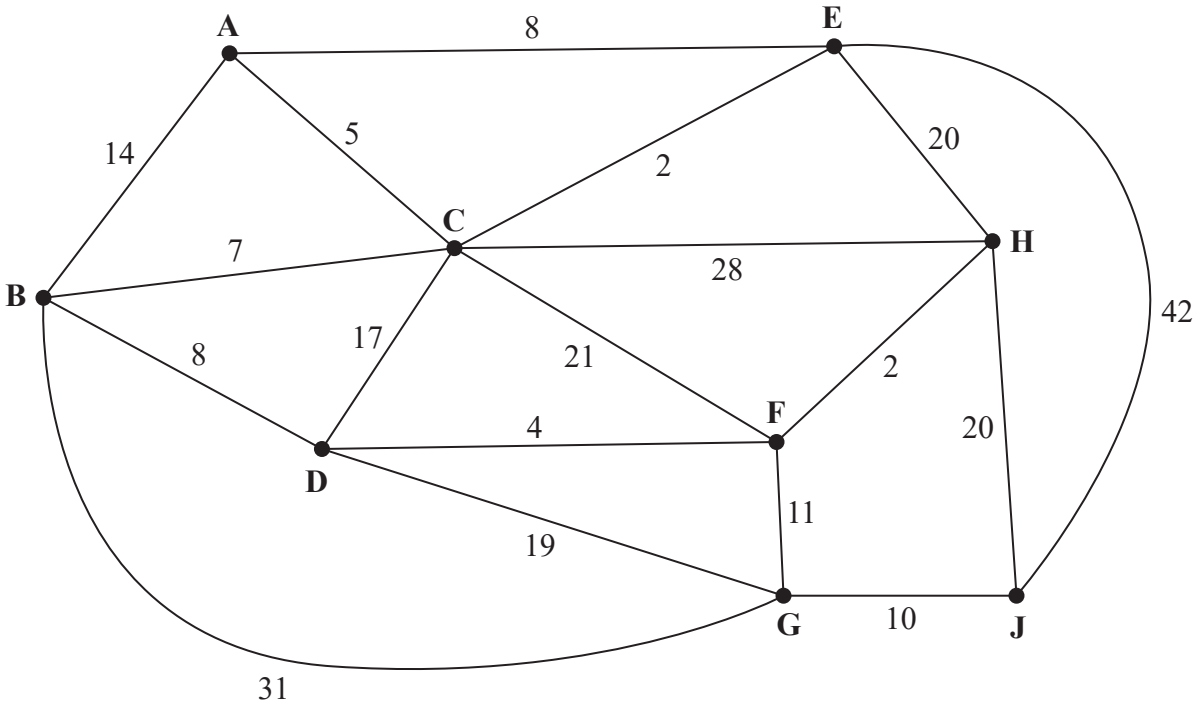
6.



[*The total weight of the network is 269*]

Figure 3

Figure 3 models a network of roads. The number on each edge gives the time taken, in minutes, to travel along the corresponding road.

(a) Use Dijkstra's algorithm to find the shortest time needed to travel from A to J. State the quickest route.

(6)

Alan needs to travel along all the roads to check that they are in good repair. He wishes to complete his route as quickly as possible and will start at his home, H, and finish at his workplace, D.

(b) By considering the pairings of all relevant nodes, find the arcs that will need to be traversed twice in Alan's inspection route from H to D. You must make your method and working clear.

(5)

For Alan's inspection route from H to D

(c) (i) state the number of times vertex C will appear,

(ii) state the number of times vertex D will appear.

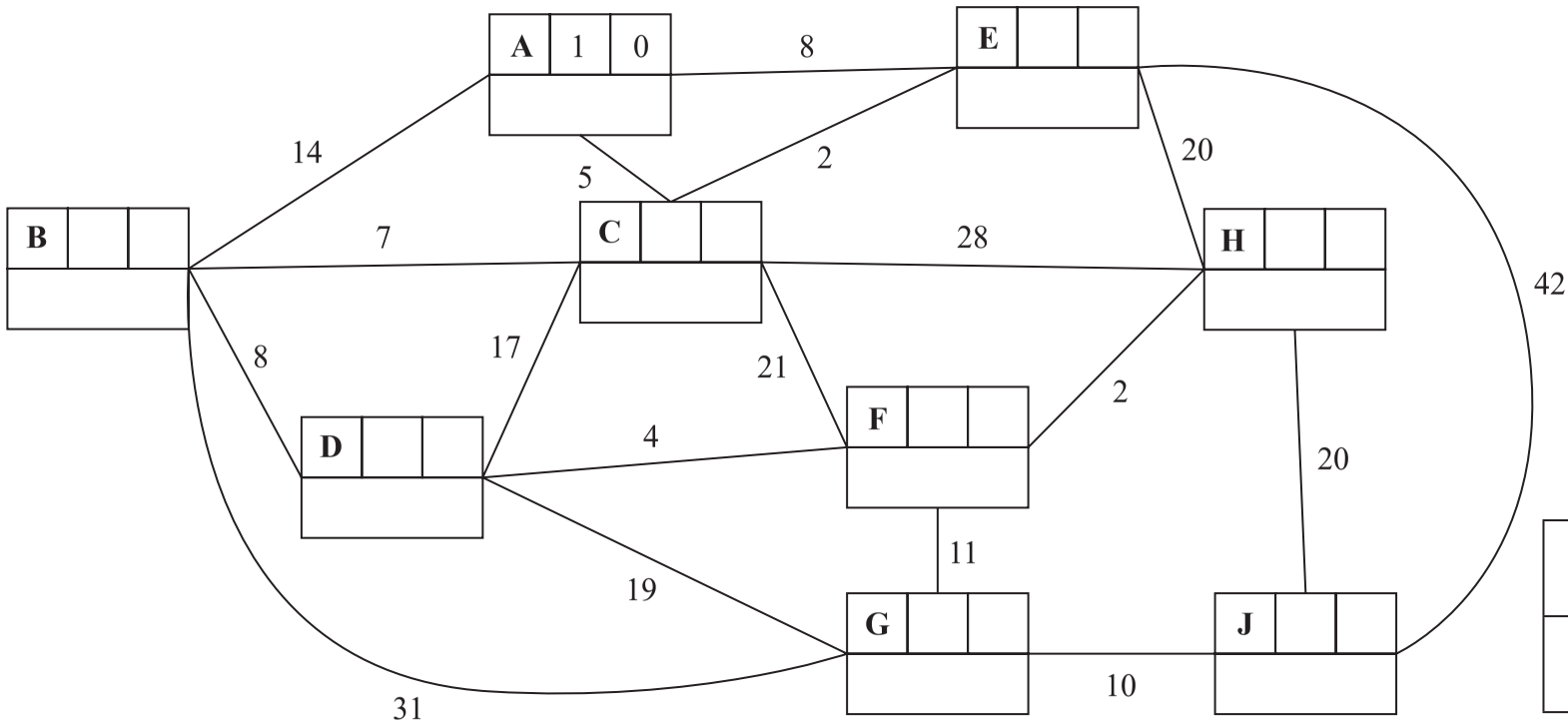
(2)

(d) Determine whether it would be quicker for Alan to start and finish his inspection route at H, instead of starting at H and finishing at D. You must explain your reasoning and show all your working.

(2)

(Total 15 marks)

6.



Key:

Vertex	Order of labelling	Final value
Working values		

Shortest time: _____

Quickest route: _____

Leave blank

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Question 6 continued

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Question 6 continued

Q6

(Total 15 marks)

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