5.

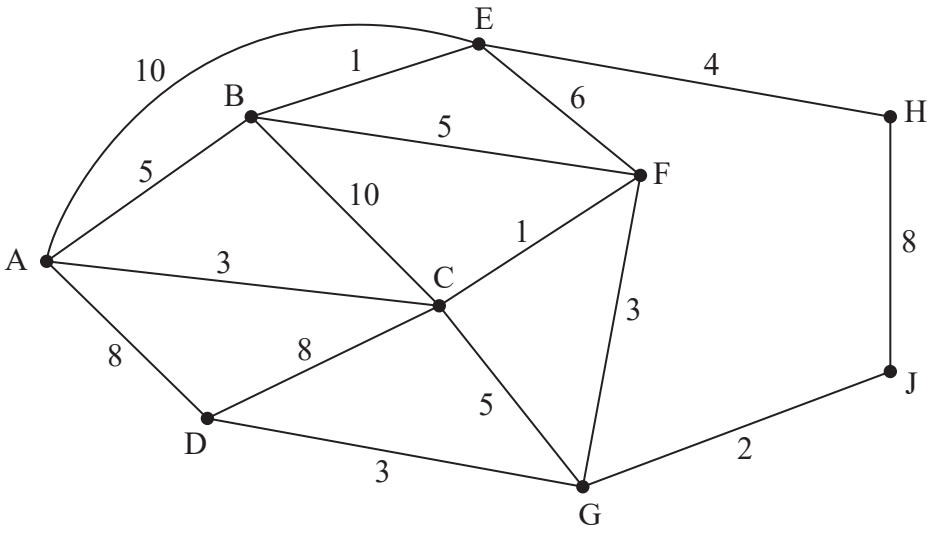


Figure 4

[*The total weight of the network is* 82]

Figure 4 represents a network of 16 roads in a city. The number on each arc represents the time taken, in minutes, to travel along the corresponding road.

Chan needs to check that the roads are in good repair. He must travel along each road at least once. Chan will start and finish at his office at G and must minimise the total time taken for his inspection route.

For this inspection route,

(a) find the time taken and state a possible route. You must make your method and reasoning clear.

(3)

Chan wonders if he can reduce his travel time by starting from his home at B, travelling along each road at least once and finishing at his office at G.

(b) By considering the pairings of all relevant nodes, find any arcs that would need to be traversed twice in the minimum inspection route from B to G. You must make your method clear, showing your working.

(5)

(c) Determine which of the two routes ending at G is quicker, the one starting at G or the one starting at B. You must justify your answer.

(2)

(Total 10 marks)