2.

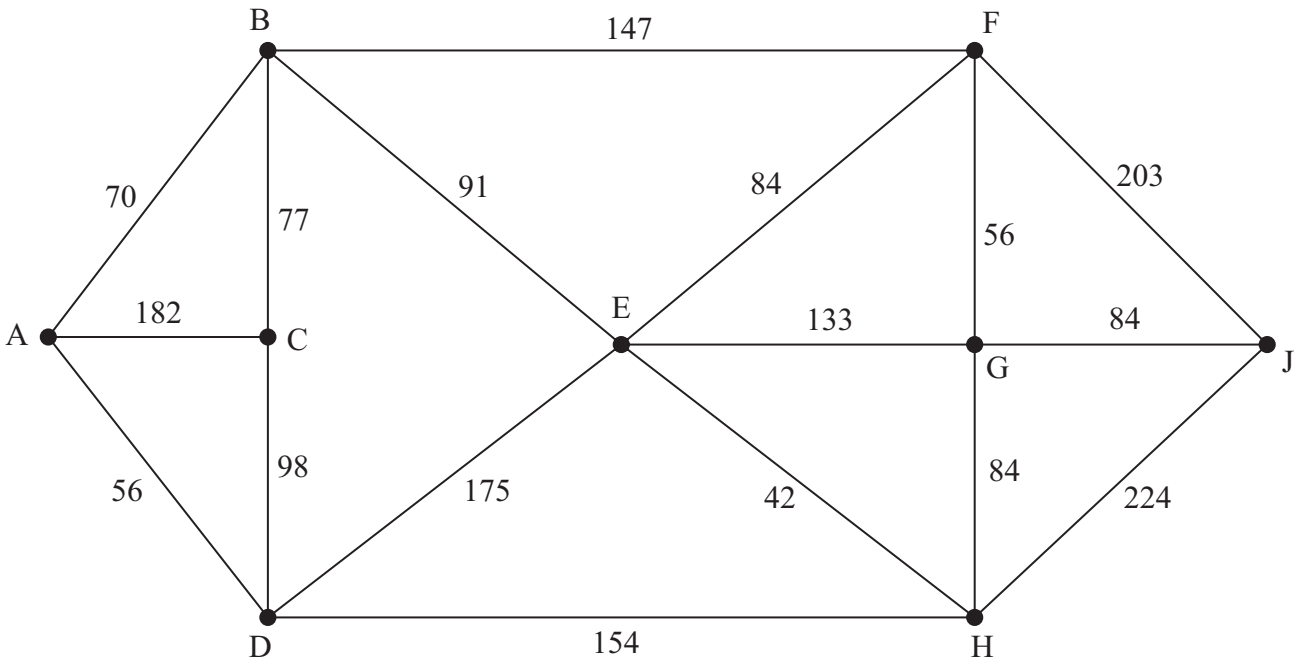


Figure 1

[*The total weight of the network is 1960 m*]

The network shown in Figure 1 represents the paths between nine attractions in a theme park.

The number on each edge is the length, in metres, of the corresponding path.

(a) (i) Use Dijkstra's algorithm to find the shortest path from A to J.

(ii) State the length of the shortest path from A to J in metres.

(6)

Sarita needs to inspect the paths between the attractions. She must travel along each path at least once.

Sarita decides to start and finish her inspection route at A. She wishes to minimise the length of her route.

(b) By considering the pairings of all relevant nodes, find the length of Sarita's route.

(4)

Sarita now decides to start her inspection route at A, but finish at a different attraction. She must still minimise the length of her route and travel along each path at least once.

(c) (i) Determine where Sarita should finish her route. You must justify your answer.

(ii) Calculate the difference between the lengths of the two inspection routes.

(3)

(Total for Question 2 is 13 marks)