5.

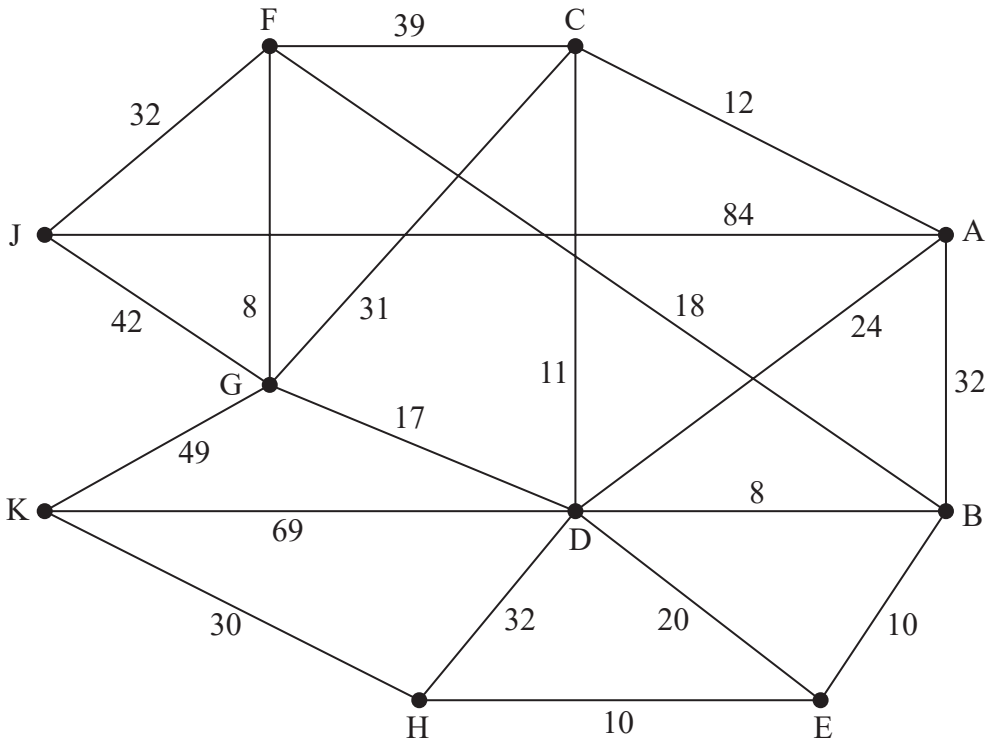


Figure 4

Figure 4 represents a network of roads. The number on each arc represents the length, in miles, of the corresponding road. Tamasi, who lives at A, needs to collect a caravan. Tamasi can collect a caravan from either J or K.

Tamasi decides to use Dijkstra's algorithm once to find the shortest routes between A and J and between A and K.

(a) State, with a reason, which vertex should be chosen as the starting vertex for the algorithm.

(2)

(b) Use Dijkstra's algorithm to find the shortest routes from A to J and from A to K. You should state the routes and their corresponding lengths.

(7)

Tamasi's brother lives at F. He needs to visit Tamasi at A and then visit their mother who lives at H.

(c) Find a route of minimal length that goes from F to H via A.

(1)

(Total 10 marks)