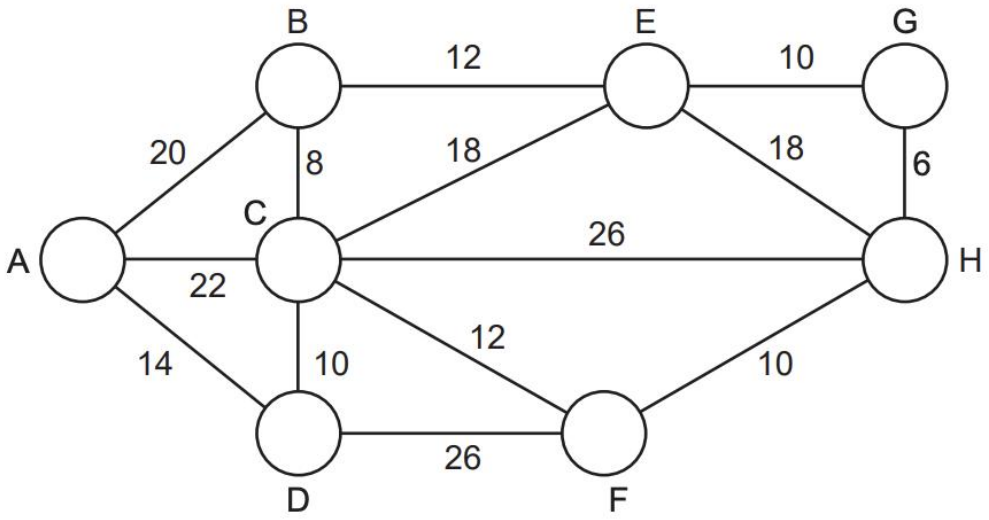
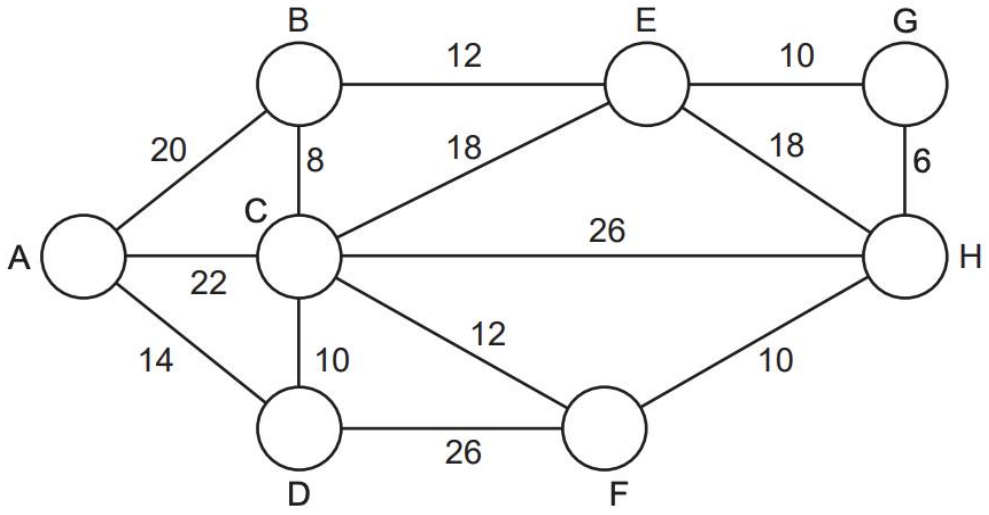
Question 13 **(9 marks)**

The graph below represents a road transport network from a warehouse at A to seven retail outlets B, C, D, E, F, G and H. The number on each edge represents the distance, in kilometres, along each road.



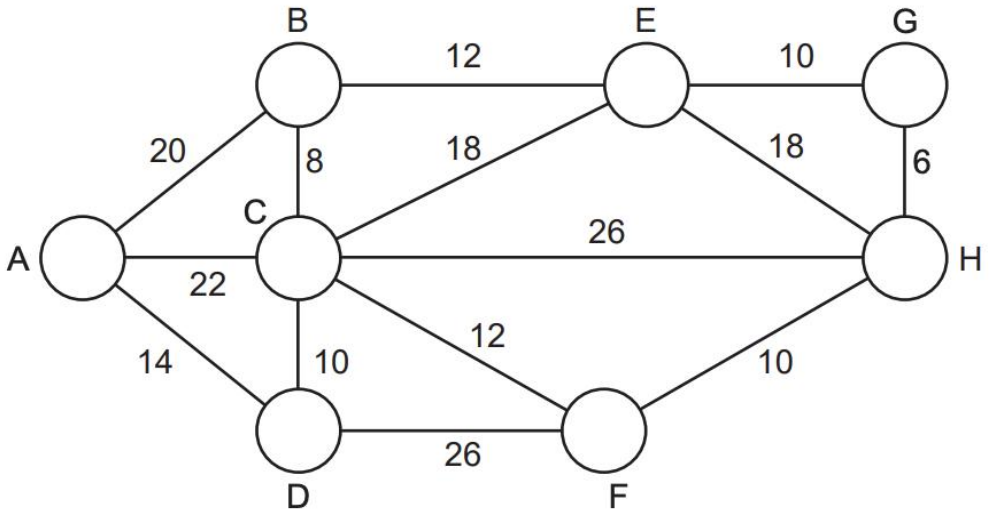
(a) Identify the shortest Hamiltonian path from the warehouse and state its length. (3 marks)

A special delivery must be made from the warehouse to retail outlet H.



(b) Determine the shortest path and the distance travelled for this delivery. Working **must** appear on the network to show an appropriate method has been used. (3 marks)

Road CH presently goes around what is now a dry salt lake. It is proposed that a direct road be constructed that will reduce the distance between retail outlets C and H.



(c) By how much can the direct road between C and H be reduced, so that the shortest path from the warehouse to H includes the direct road CH? (3 marks)