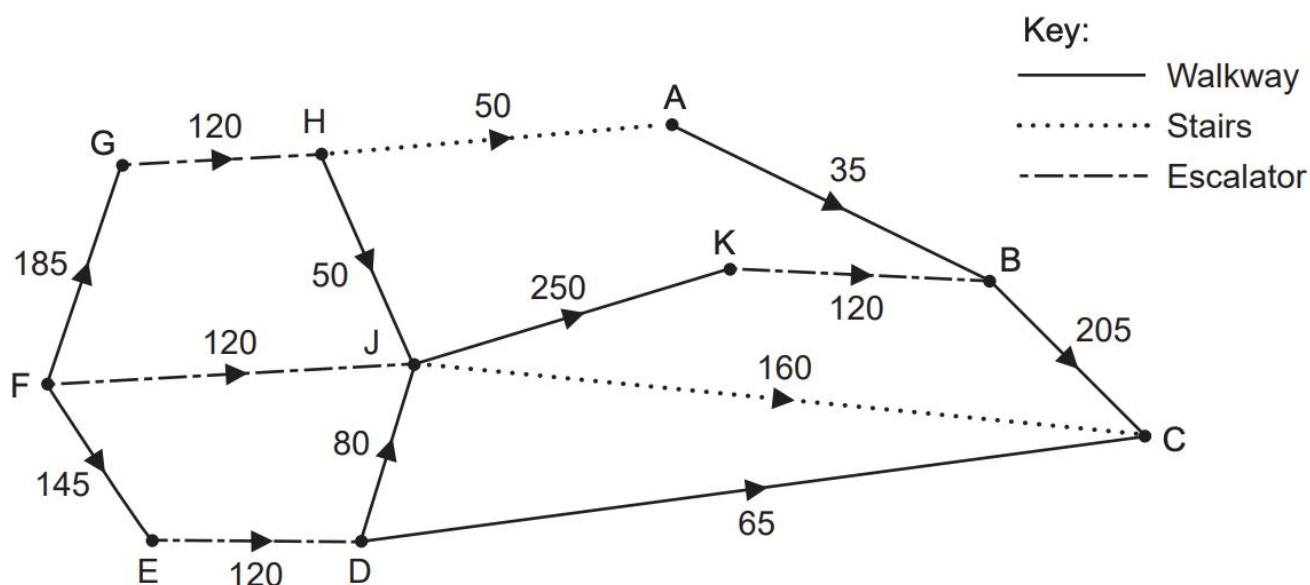


Question 12

(8 marks)

The network below shows the different routes commuters can take, travelling from a bus stop to a designated train platform. The edges are a combination of stairs, escalators and covered walkways, with the numbers indicating the maximum number of people per minute that each route can manage.



(a) Which vertex represents

(i) the bus stop?

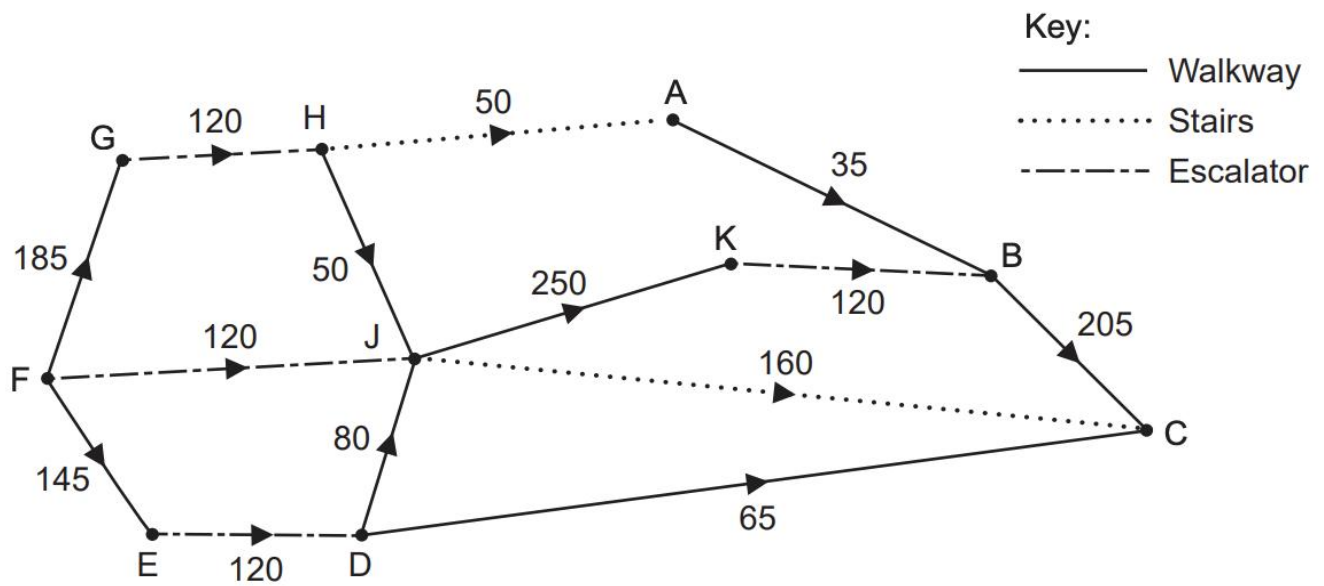
(1 mark)

(ii) the train platform?

(1 mark)

(b) Determine the maximum number of people per minute that can travel from the bus stop to the train platform, listing each path and the corresponding flow. (3 marks)

- (c) Draw the minimum cut that corresponds to the maximum flow on the network diagram. (1 mark)



- (d) The Transport Authority has approved upgrades for one **escalator** connection to increase the capacity from 120 to 150 people per minute. Which connection should be upgraded? Justify your response. (2 marks)