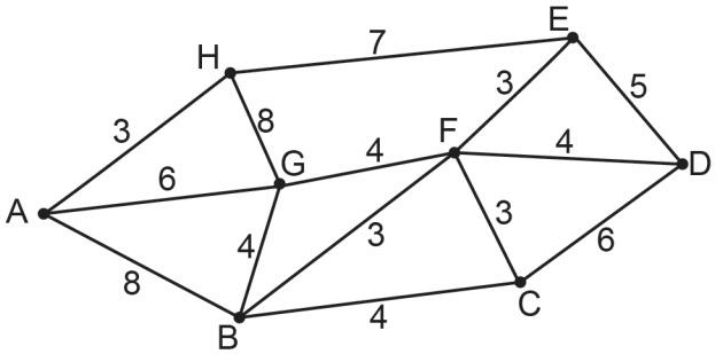
Question 1 **(7 marks)**

Joe wishes to upgrade his sprinkler system using the least possible length of piping. The weighted graph below shows the existing system. The numbers on the edges indicate the length of each pipe, in metres, between sprinklers A, B, C, D, E, F, G and H.



(a) Complete the table below showing connections between each sprinkler. (2 marks)

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
A	–	8						3
B	8	–						
C			–	6				
D			6	–				
E					–	3		7
F					3	–		
G							–	
H	3				7			–

(b) Show the use of Prim's algorithm to establish a minimum spanning tree for the least length of piping required and draw this tree on the diagram below. (5 marks)