Write your answers in the D1 answer book for this paper.

1.

	A	B	C	D	E	F
A	–	73	56	27	38	48
B	73	–	58	59	43	34
C	56	58	–	46	38	42
D	27	59	46	–	25	32
E	38	43	38	25	–	21
F	48	34	42	32	21	–

The table above shows the least distances, in km, between six cities, A, B, C, D, E and F. Mohsen needs to visit each city, starting and finishing at A, and wishes to minimise the total distance he will travel.

(a) Starting at A, use the nearest neighbour algorithm to obtain an upper bound for the length of Mohsen's route. You must state your route and its length.

(3)

(b) Starting by deleting A and all of its arcs, find a lower bound for the length of Mohsen's route.

(3)

(c) Use your answers from (a) and (b) to write down the smallest interval that you can be confident contains the optimal length of the route.

(2)

(Total 8 marks)