Question	Scheme	Marks
6 (a)	Considers pairings of nodes F, J, K and M FJ + KM = 32+14 = 46 FK + JM = 15+26 = 41 FM + JK = 13+17 = 30 Repeat FG GM JL LK Total length = 338 + 30 = 368 (km)	**M1** **A1** **A1** **A1** **A1ft**
	Special Case Max M1 A1 A0 A0 A0 Considers pairings of A, F, K and M AF + KM = 26 + 14 = 40 AK + FM = 41 + 13 = 54 AM + FK = 39 + 15 = 54	
		(5)
(b)	Now only repeat needed is KM, length 14 e.g. New length 338 + 18 + 14 = 370 (km) (Increases length by) 2 (km)	**M1** **A1**
		(2)
		(7 marks)

Notes	
a1M1	The correct three pairings of the correct four nodes F, J, K and M with one row correct (including total)
a1A1	Two rows correct including pairings **and** totals
a2A1	All three rows correct including pairings **and** totals
a3A1	CAO for the repeated arcs
a4A1ft	338 + their smallest from a choice of three totals
M1 **A1** **A0** **A0** **A0**	**Special Case – considers A, F, K, M** Three pairings of the four nodes with one row correct (including total) All three rows correct including pairings and totals No further marks available
b1M1	Considers KM (may be implied by a correct calculation) as only pair of odd nodes and calculates new length 338 + 18 +14 or calculates 18 + 14 as new additional length
b1A1	CAO – 2 (km) (must not come from any incorrect working)