Question	Scheme	Marks
2 **(a)**	PR PU UV PQ RS ST	**M1** **A1**
		(2)
(b)	"540" x 2 = 1080 (metres)	**M1** **A1ft**
		(2)
(c)	PRSTUVQP 880 (metres)	**M1** **A1** **A1**
		(3)
(d)	$540-75+(75+180)=720$ (metres)	**M1** **A1**
		(2)
		(9 marks)

Notes	
a1M1	Prim - first three arcs correctly chosen in order (PR, PU, UV, …) **or** first four nodes {P, R, U, V, …}. If any explicit rejections seen at some point then M1 (max) only. Order of nodes may be seen at the top of a matrix/table {1, -, 2, - , - , 3, 4 }. Starting at any other node can score M1 only for first three arcs chosen correctly
a1A1	CSO – all **arcs** correctly **stated** and chosen in the correct order (with no additional arcs). They must be considering arcs for this mark (do not accept a list of nodes or numbers across the top of the matrix unless the correct list of arcs (in the correct order) is also seen)
b1M1	Calculates the weight of their MST and doubles If their MST is incorrect, follow through the total for their tree (must be exactly 6 arcs)
b1A1ft	1080 or 2 x "their 540" (if any subsequent calculations are seen do not isw this is A0) (1080 implies both marks)
c1M1	NN route attempted, first five nodes correct PRSTU (accept arcs for this mark PR, RS, ST, TU, …) (do not accept numbering across the matrix here unless nodes or arcs are stated in the correct order)
c1A1	CAO – Route correct including return to P (accept arcs PR, RS, ST, TU, UV, VQ, QP) (condone if arcs stated alphabetically instead of in route order)
c2A2	CAO – 880 (metres) (if they double the length of the NN route do not isw, this is A0)
d1M1	Their "540" – 75 + two shortest from T (a new calculation to find the RMST may be seen e.g. new table with T deleted and a new MST calculation, with the correct 5 arcs circled PR PU UV PQ RS plus two shortest from T)
d1A1	CAO – A final answer of 720 implies both marks (if additional calculations seen do not isw)