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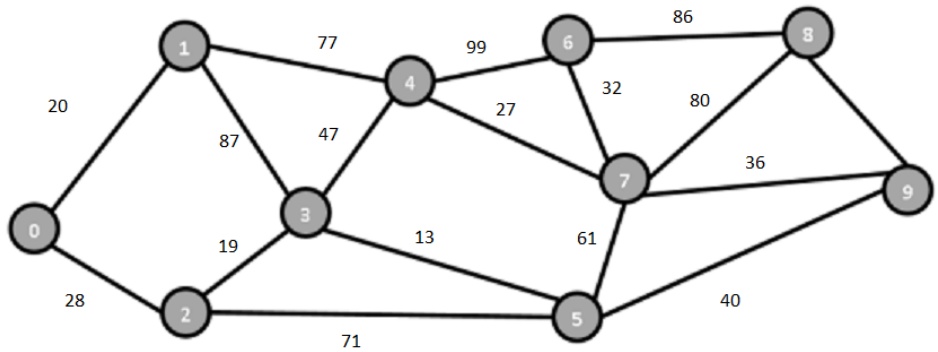
8 A.M.
P3-Vehicle Transportation 2

Vehicle Transportation

Arc	Tail	Head	Cost
a	0	1	20
b	0	2	28
c	1	3	87
d	1	4	77
e	2	3	19
f	2	5	71
g	3	4	47
h	3	5	13
i	4	6	99
j	4	7	27
k	5	7	61
l	5	9	40
m	6	7	32
n	6	8	86
o	7	8	80
p	7	9	36



Question 2
Shortest Route Problem

Route 0 → 8:

1. 0 - 2, 2 - 3, 3 - 4, 4 -7, 7 - 8 = 201
2. 0 - 2, 2 - 3, 3 - 5, 5 - 7, 7- 8 = 201

Route 1 → 9: 1 - 0, 0 - 2, 2 - 3, 3 - 5, 5 - 9 = 120

Route 2 → 6: Multiple optimal paths

1. 2 - 3, 3 - 4, 4 - 7, 7 - 6 = 125
2. 2 - 3, 3 - 5, 5 - 7, 7 - 6 = 125

Question 3
Shortest Route Problem with Constraint

With the constraint applied, we are no longer travelling on the optimal path for route 0 → 8 and have added 3 units of cost to the travel route.

Routes 1 → 9 and 2 → 6 remain unchanged

Route 0 → 8: 0 - 1, 1 - 4, 4 - 7, 7 - 8 → 204

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Route 1 → 9: 1 - 0, 0 - 2, 2 - 3, 3 - 5, 5 - 9 = 120

Route 2 → 6: 2 - 5, 5 - 7, 7 - 6 = 164

Question 4
Report on Results

For question 2, we approached the solution by finding the shortest path manually by checking the distances of different paths through the arcs that can reach the destination in the most cost-effective way.

For question 3, we were able to use the optimal path for the first two deliveries with no complications however for the third delivery we had to use a different path because the optimal arcs were occupied by the other delivery paths. Changing the 1st delivery path proved to be the most cost-effective because it only increased the cost of the overall delivery by 3 units of cost.