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QQ8

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0 points possible (ungraded)

Which of the following statements are true concerning the Clark-Wright Savings Algorithm for the Vehicle Routing Problem (VRP)? (You may check more than one choice)

☒ a) The Savings Algorithm will always provide the same solution if run more than once.



☒ b) Nodes that are preceded and followed by other demand nodes in a tour cannot be considered for joining to another node to expand the tour. ✓

☒ c) The Savings List should be sorted from the largest to the lowest and the largest savings should be considered first. ✓

☒ d) As long as the triangle inequality (that is for three nodes, i, j , and k , $c(ij)$ is less than $c(ik) + c(kj)$) holds, the savings can never be negative. ✓

☐ e) If N is the number of demand nodes in the network, then there are N vehicle tours in the initial solution. ✓



Explanation

They are all correct.

a) True. The algorithm will always give the same solution if when I use the same input data. It would not be a valid algorithm if it changed its answers each time using identical input!

b) True. Nodes that are preceded and followed by other demand nodes are interior nodes and cannot be added to a new tour. Remember, the savings is calculated by finding the savings of removing trips to and from the depot.

c) True. Always consider joining arcs that offer the largest savings!.

d) True. The smallest savings value will be zero in this case. Think of the situation where one node is 10 miles due east and the second node is 10 miles due west. The savings would be $10 + 10 - 20 = 0$.

e) True. Yes - each node is visited in a single out-and-back tour in the initial solution. The savings are then made off of this initial set of tours by combining nodes into a common tour.

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i Answers are displayed within the problem

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