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Final Exam 27/05/24

63

31 + 28.5 + 3 bonus M-class ass

1: It's appropiate we heuristics, to want to solved in a reasonable time using exact methods". +3.5

?

2: When the problem have variables Polynomials, so the time to take to solve the problem take to much time. +3.5

3: Yes, the problem that you can solve using exact algorithms. +4 such as?

4: Usually its designed to build feasible solutions, but always not guarante optimality. +5

5: It's a method that builds a solution step by step. You can start with nothing, or with a partial solution, adding complements until the feasible solution is complete. +4.5

6: Start with a initial solution and explores the neighborhood, always finding better solution. +4

7: The 2-OPT heuristic, its a method that works by exchanging two edges to reduce the total tour length. In each interaction, two edges are selected, removed, and the affected nodes are reconnected in diferent way that reduces the total distance. +4.5

8- You can use different ways to know which one its better, one of one its the Solution avoid measure the objective function value for the Solution obtained each heuristic.

+2

Section (2 Problems)

Q:

a) Yes, its a feasible solution because each element of the set $V = \{1, 2, \ldots n\}$ is included in one of the subsets and there are no overlaps.

+2.5

7 is missing

b) Yes, its a feasible solution each element of V is included in only one subset

+6

c) $X(B) = (\{1, 5, 9\}, \{2, 4, 6, 8, 10\}, \{3, 7\}) = 150$

+2

$X+O(\{2, 5, 9\}, \{1, 3, 4, 8\}, \{6, 10\}) = 130$ / 140

$X+S = (\{1, 3, 7\}, \{2, 5, 10\}, \{4, 6, 9\}) =$

0

X^1, X, S, X^3

↑ best one ↑ worst one

d)

d) Empty clusters C[1] C[2] C[3]

+8 For each object in V select the cluster with the smallest increase in dissimilarity if the object it's added

Add the object to that cluster

Voyé Return clusters (C1) (C2) (C3)

Thats probably the way that probably I do it.

e) +0

f) ~~Start with~~ +8

1rst. start with an initial feasible solution (X). This solution consist of p clusters each containing subset of the n objects

2nd For each object in each cluster evaluate moving the object to another cluster.

3- If the move improve the total dissimilarity make the move

4- Reapeat until no further improvement are found.

g) +0