Examen Applications of operations research juni 2022

Question 1: Given was a multiple traveling salesman problem → make corrections (like min instead of max; constraints that were incorrect…)

Question 2 : Add 2 constraints to a given IP, constraints were explained in words

Question 3: Column generation: Set of n orders, each order yields specific profit, takes a certain processing time. Each order handled by one employee, employees have max workinghours T

Question 4:

a) give constructive heuristic on question 3 —> utility?
b) give local search

Question 5: lagrange multiplier (max)

a) relaxed problem
b) what are the values of Lagrange multiplier?
c) How can you solve relaxed problem, decompose?

Question 6: directed graph G(N,E) algorithm; cardinality

1. it will divide subset of arcs A into two groups A1(i<j, arcs with increasing order) and A2 (i>j arcs with decreasing order)
2. if |A1| > |A2|, then return A1. Otherwise return A2
    a) toon aan dat dit altijd een feasible solution geeft
    b) performance guarantee of 2 → toon aan

Question 7: True/False + explain

1. Large T decrease will level out maximum/minimum
2. There is a unique global optimum, local search guarantees to find it
3. Genetics algorithm gives one best solution → False? x2
4. When allowing a move that was made tabu, when it increases the function, it will escape from a local optimum.