

QUIZ 5

- 1) Solve the following problem using GAMA method, use can use simulated annealing or QPU for annealing

Objective function:

$$\max_x 2x_0 + 5x_1 + 9x_2 + 14x_3 + 12x_4 + x_5 + 4x_6 + x_7 + 9x_8 + 2x_9$$
$$s.t. \vec{x} \in \{0, 1\}^{10}$$

Constraints:

$$0 \leq -2x_0 + 3x_1 + 9x_2 - 8x_3 + 12x_4 + 6x_5 + 5x_6 - 1x_7 - 4x_8 + 6x_9 \leq 15$$

and

$$1 \leq -x_0 + 6x_1 - 9x_2 + 10x_3 - 4x_4 + 5x_5 + 8x_6 - 2x_7 - 8x_8 + 4x_9 \leq 2$$

Hint:

Add slack variables to convert above inequalities to linear equalities and then use GAMA

- 2) Plot how objective function changes before and after augmentation for every feasible solution. What happens if you consider only 2 graver elements, do you still reach the optimal solution?