BBO.1

[RMP]

$$\begin{aligned} \min \quad & 100 y_0 \\ \pi_1 \quad & 0 \le 14 \\ \pi_0 \quad & y_0 = 1 \\ & y_0 \ge 0 \end{aligned}$$

$y_0 = 1$ $\quad \pi_0 = 100$

$\hat{z} = 100$ $\quad \pi_1 = 0$

[SP] $\min \sum (c_{ij} - \pi_1 t_{ij}) x_{ij} - \pi_0 = \min \sum c_{ij} x_{ij} - 100$

s.t. (1,2)-(1,4),(1,6)

$\bar{c}^* = -97$ $\quad P_{1246}$ $\quad C_p = 3$ $\quad t_p = 18$

BBO.2

[RMP]

$$\begin{aligned} \min \quad & 100 y_0 + 3\lambda_{1246} \\ \pi_1 \quad & 18\lambda_{1246} \le 14 \\ \pi_0 \quad & y_0 + \lambda_{1246} = 1 \\ & y_0, \lambda_{1246} \ge 0 \end{aligned}$$

$\lambda_{1246} = 0.78$ $\quad \pi_0 = 100$

$y_0 = 0.22$

$\hat{z} = 24.6$ $\quad \pi_1 = -5.39$

[SP] $\min \sum (c_{ij} - \pi_1 t_{ij}) x_{ij} - \pi_0 = \min \sum (c_{ij} + 5.39 t_{ij}) x_{ij} - 100.$

s.t. (1,2-1,4) (1,6)

$\bar{c}^* = -32.9$ $\quad P_{1356}$ $\quad C_p = 24$ $\quad t_p = 8$

BBO.3

[RMP]

$$\begin{aligned} \min \quad & 100 y_0 + 3\lambda_{1246} + 24\lambda_{1356} \\ & 18\lambda_{1246} + 8\lambda_{1356} \le 14 \\ & y_0 + \lambda_{1246} + \lambda_{1356} = 1 \\ & y_0, \lambda_{1246}, \lambda_{1356} \ge 0. \end{aligned}$$

$\lambda_{1246} = 0.6$ $\quad \pi_0 = 40.8$

$\lambda_{1356} = 0.4$ $\quad \pi_1 = -21$

$\hat{z} = 11.4$

[SP] $\min \sum (c_{ij} + 21 t_{ij}) x_{ij} - 40.8$

s.t. (1,2-1,4) (1,6)

$\bar{C}^* = -48$ $\quad P_{13256}$ $\quad C_p = 15$ $\quad t_p = 10$