$$Min \sum_{k=0}^{|K|-1} \sum_{i=0}^{|N|-1} \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} c_{ijk} x_{ijk}$$

Sujeito a

$$\sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} x_{ijk} \leq 1, \forall\, k, i = o(k) \tag{1}$$

$$\sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} x_{ijk} = \sum_{\substack{j=0 \\ j\neq l}}^{|N|-1} x_{jlk}\,, \forall\, k, i = o(k), l = o'(k) \tag{2}$$

$$\sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} x_{ijk} - \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} x_{jik} = 0, \forall\, k, \forall\, i \in N\backslash\{o(k), o'(k)\} \tag{3}$$

$$\sum_{k=0}^{|K|-1} \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} y_{ijkr} = 1, \forall\, r, i = p(r) \tag{4}$$

$$\sum_{k=0}^{|K|-1} \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} y_{jikr} = 1, \forall\, r, i = d(r) \tag{5}$$

$$\sum_{k=0}^{|K|-1} \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} y_{ijkr} - \sum_{k=0}^{|K|-1} \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} y_{jikr} = 0, \forall\, r, \forall\, i \in T \tag{6}$$

$$\sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} y_{ijkr} - \sum_{\substack{j=0 \\ j\neq i}}^{|N|-1} y_{jikr} = 0, \forall\, k, \forall\, r, \forall\, i \in N\backslash T \tag{7}$$

$$y_{ijkr} \leq x_{ijk}, \forall\, i, \forall\, j \neq i, \forall\, k, \forall\, r \tag{8}$$

$$\sum_{r=0}^{|R|-1} q_r y_{ijkr} \leq u_k x_{ijk}, \forall\, i, \forall\, j \neq i, \forall\, k \tag{9}$$

$$x_{ijk} \in \{0,1\}, \forall\, i, \forall\, j \neq i, \forall\, k \tag{10}$$

$$y_{ijkr} \in \{0,1\}, \forall\, i, \forall\, j \neq i, \forall\, k, \forall\, r \tag{11}$$