4. Depot departure and return constraints:

$$x_{0jk} = 1 \quad \forall k \in K$$

$$x_{i0k} = 1 \quad \forall k \in K$$

5. Load constraints:

$$q_{ik} \geq d_i \quad \forall i \in C, \forall k \in K$$

$$q_{jk} \geq q_{ik} + d_j - q(1 - x_{ijk}) \quad \forall i, j \in C, \forall k \in K$$

6.Binary and non-negativity constraints:

$$x_{ijk} \in \{0, 1\} \quad \forall (i, j) \in A, \forall k \in K$$

$$y_{ik} \in \{0, 1\} \quad \forall i \in C, \forall k \in K$$

$$q_{ik} \geq 0 \quad \forall i \in C, \forall k \in K$$