

# Notation and Abbreviations

## *Notation*

$b_i$  Capacity associated to potential plant location  $i \in I$ .

$c_{t_1 t_2}$  Traveling cost for going from  $t_1$  to  $t_2$ , where  $t_1, t_2 \in I \cup J$ , not both in  $I$ .

$d_j$  Demand of customer  $j \in J$ .

$f_i$  Fixed opening cost associated to potential plant location  $i \in I$ .

$p$  Probability that a given customer has demand.

$I$  Set of potential plant locations.

$J$  Set of customers.

$P$  Penalty paid when a customer with demand is not served.

$\xi_j$  Random variable indicating the presence of customer  $j \in J$  as a demand point.

$\mathbb{E}_\omega$  Mathematical expectation with respect to the random variable  $\omega$ .

$\mathbb{P}$  Probability of a general event.

$\mathcal{Q}$  Recourse function. (Expected cost of the recourse action)

$(expr)^+$  Positive part. It is the maximum between  $expr$  and 0.

## *Abbreviations*

**ATSP** Asymmetric Traveling Salesman Problem

**CG** Column Generation

**CO** Combinatorial Optimization

**CPLP** Capacitated Plant Location Problem

**ESPPRC** Elementary Shortest Path problem with Resource Constraints

**GAP** Generalized Assignment Problem

**KCPTP** Knapsack Constraint Profitable Tour Problem

**KP** Knapsack Problem

**LP** Linear Programming

**LRP** Location-Routing Problem

**LS** Local Search

**OR** Operations Research

**PTSP** Probabilistic Traveling Salesman Problem

**SLRP** Stochastic Location Routing Problem

**SSCPLP** Single Source Capacitated Plant Location Problem

**TS** Tabu search

**TSP** Traveling Salesman Problem

**UFLP** Uncapacitated Facility Location Problem

**VRP** Vehicle Routing Problem

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