

Section-3

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Q1

Objective of LPP → L.P.P is a mathematical concept used to determine the solution of a linear problem. Typically the goal of linear programming is to maximize or minimize specified objectives such as profit or cost. This process is known as optimization.

* Mathematical form of L.P.P's

Let $x_1, x_2, x_3, \dots, x_n$ be n decision variables then, the mathematical form of LPP or so called general LPP. Each as follows

$$Z = C_1 x_1 + C_2 x_2 + \dots + C_n x_n \quad \text{--- (1)}$$

Subject to the constraint

$$\textcircled{2} \left\{ \begin{array}{l} a_{11}x_1 + a_{12}x_2 + \dots + a_{1n}x_n \quad (\leq) b_1 \\ a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n \quad (\leq) b_2 \\ a_{31}x_1 + a_{32}x_2 + \dots + a_{3n}x_n \quad (\leq) b_3 \\ \vdots \\ a_{m1}x_1 + a_{m2}x_2 + \dots + a_{mn}x_n \quad (\leq) b_m \end{array} \right.$$

& non-negativity restriction

$$x_1, x_2, \dots, x_n \geq 0 \quad \text{--- (3)}$$

Where all a 's, b 's & c 's called constraints



The eqⁿ ① is the objective function.
eqⁿ ② are constraints
eqⁿ ③ are non-negativity restrictions
(), =, ≤

means any of these 3 signs may be there for constraints which do not affect the possible solⁿ are known as redundant restriction.