

## Development / Formulation of LP Models.

- Decision Variable
- Objective function Coefficient
- Objective function
- Technological Coefficient
- Resource availability
- Set of Constraints
- Non-negative Constraints.

## Development of LP Model - Maximization Problem.

- ① A Company manufactures two types of products  $A_1$  and  $A_2$ . Each product uses Milling and Drilling machine. The process time per unit of  $A_1$  on the milling is 10 hours and on the Drilling machine is 8 hours. The Processing time per unit of  $A_2$  on the Milling is 15 hours and on the Drilling machine, 10 hours. The maximum number of hours available per week on the Milling and the Drilling machine are 80 hours and 60 hours, respectively. Also the profit per unit of selling  $A_1$  and  $A_2$  are Rs. 25 and Rs. 35, respectively.

Formulate a LP Model to determine the production volume of each of the products such that the total profit is maximized.

Solu:

### Details of Products

Machine	Machine hours/unit		Limit on machine hours.
	Product A <sub>1</sub>	Product A <sub>2</sub>	
Milling machine	10	15	80
Drilling machine	8	10	60
Profit/unit (Rs.)	25	35	

Let  $x_1$  and  $x_2$  be the production volumes of Products A<sub>1</sub> and A<sub>2</sub> respectively.

$$\text{Maximize } Z = 25x_1 + 35x_2$$

Subject to

$$10x_1 + 15x_2 \leq 80$$

$$8x_1 + 10x_2 \leq 60$$

$$x_1 \text{ and } x_2 \geq 0$$