14. A company manufactures two types of sweaters: type A and type B. It costs Rs 360 to make a type A sweater and Rs 120 to make a type B sweater. The company can make at most 300 sweaters and spend at most Rs 72000 a day. The number of sweaters of type B cannot exceed the number of sweaters of type A by more than 100. The company makes a profit of Rs 200 for each sweater of type A and Rs 120 for every sweater of type B.

Formulate this problem as a LPP to maximize the profit to the company.

Solution:

Let's assume x and y to be the number of sweaters of type A and type B respectively.

From the question, the following constraints are:

$360x + 120y \leq 72000 \Rightarrow 3x + y \leq 600$ ... (i)

$x + y \leq 300$ ... (ii)

$x + 100 \geq y \Rightarrow y \leq x + 100$ ... (iii)

Profit: $Z = 200x + 120y$

Therefore, the required LPP to maximize the profit is

Maximize $Z = 200x + 120y$ subject to constrains

$3x + y \leq 600$, $x + y \leq 300$, $y \leq x + 100$, $x \geq 0$, $y \geq 0$.