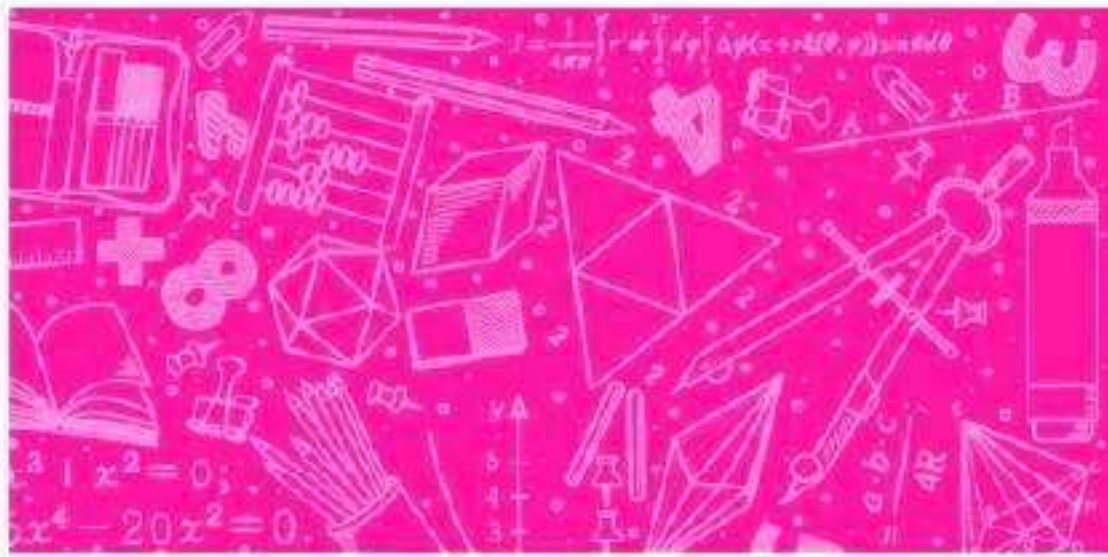




BASIC CONCEPTS

Arrow diagram for bound

2. Corner points of the feasible region are $(1, 1)$ and $(3, 0)$. Let $Z =$ occurs at $(3, 0)$ and $(1, 1)$

(a) $p = 2q$

3. Which of the following

(a) $\{(x, y) : x^2 + y^2 \geq 5\}$

(c) $\{(x, y) : 3x^2 + 4y^2 \geq 5\}$

4. Let Z_1 and Z_2 are two o

(a) $Z = \lambda Z_1 + (1 - \lambda) Z_2$

(b) $Z = \lambda Z_1 + (1 - \lambda) Z_2$

(c) $Z = \lambda Z_1 + (1 + \lambda) Z_2$

(d) $Z = \lambda Z_1 + (1 + \lambda) Z_2$

5. The maximum value of

(a) 36

6. Consider a LPP given b

Min $Z = 6x + 12y$

12. Objective function of a

(a) constraint

(c) a relation between t

13. The objective function

$$3x + 4y \leq 24, 8x + 6y \leq$$

(a) at only one point

(c) at an infinite number

14. The point at which the

$$2x + y \leq 95, x, y \geq 0 \text{ is}$$

(a) (30, 25)

15. By the graphical method

$$\text{Maximize } Z = 3x_1 + 5x_2$$

$$\text{subject to } 3x_1 + 2x_2 \leq 18$$

$$x_1 \leq 4$$

$$x_2 \leq 6$$

$$x_1, x_2 \geq 0 \text{ is}$$

(a) $x_1 = 2, x_2 = 0, z = 6$

**24. Feasible region shaded
point**

$(a) (0, 0)$

25. The maximum value of

she has to invest at least
share A is 8% per annum



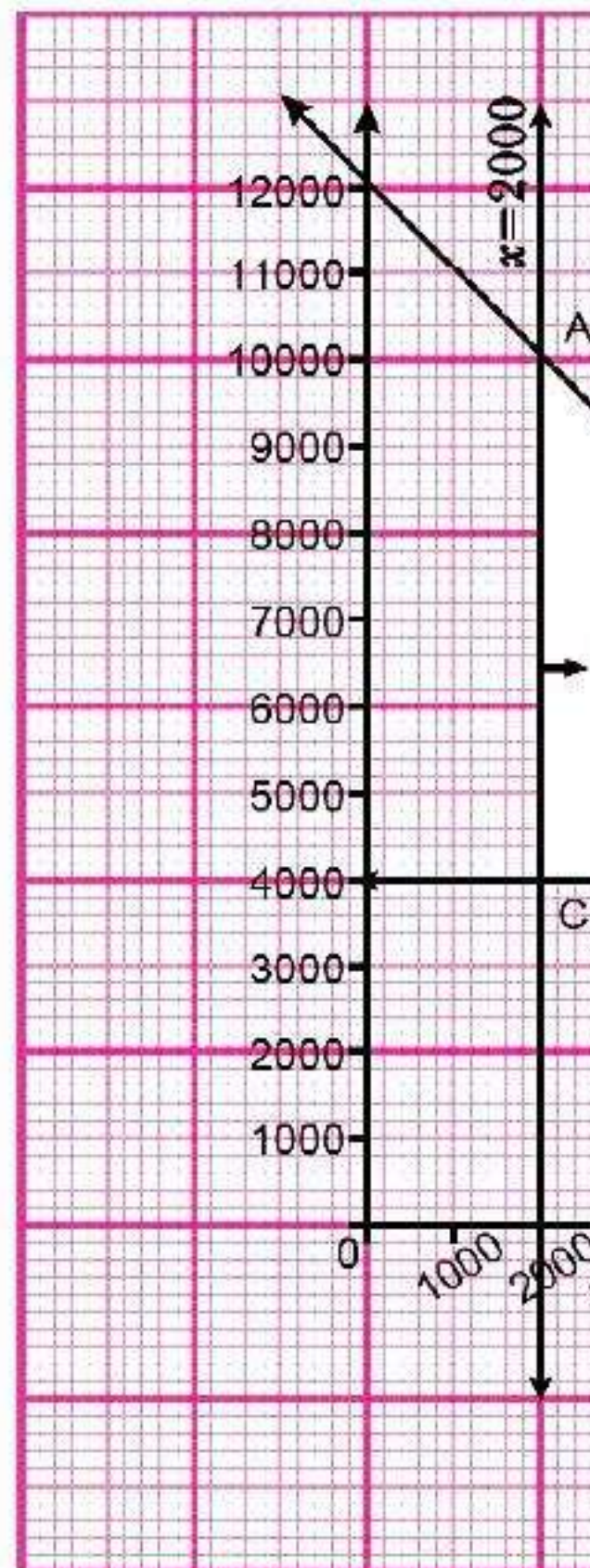
Answer the questions given below

(i) If Dr. Ritam invests ₹2000 in share A, how much does she invest in share B?

(a) $x = 2000$

(ii) If she invest ₹ y in share A, how much does she invest in share B?

(a) $y = 4000$



Answer the questions given below

(i) If Ramprakash purchases 20 items, then which of the following is correct

(a) $x + y = 20$

(ii) If Ramprakash has a budget of ₹5760, then which of the following is correct

(a) $x + y \leq 5760$

(c) $360x + 240y \geq 5760$

(iii) If he expects to sell 100 items, then which of the following profit Z is expressed correctly

(a) $Z = 18x + 22y$

(iv) If he sells all the items, then which of the following will get maximum profit

(a) $x = 10, y = 12$

(v) The maximum profit is

(c) ₹360



Answer the questions given below

(i) If there be x tickets of Rs 100 and y tickets of Rs 50, the total amount of the following is

(a) $x + y = 200$

(ii) Which pair of corners of the rectangle is

(iii) Profit on executive

Profit on executive

$\therefore$ Total profit $Z =$

Option (b) is correct

(iv) We have

$$Z = 400x + 300y \text{ w}$$

$$x + y \leq 200$$

$$x \leq 40$$

$$x \geq 20, y \geq 0$$

Here, $ABCD$ in

$C(40, 160), D(20, 180)$

Now we evaluate

Corner Point
$A(20, 0)$
$B(40, 0)$

X'

Reason (R) : A region
points I

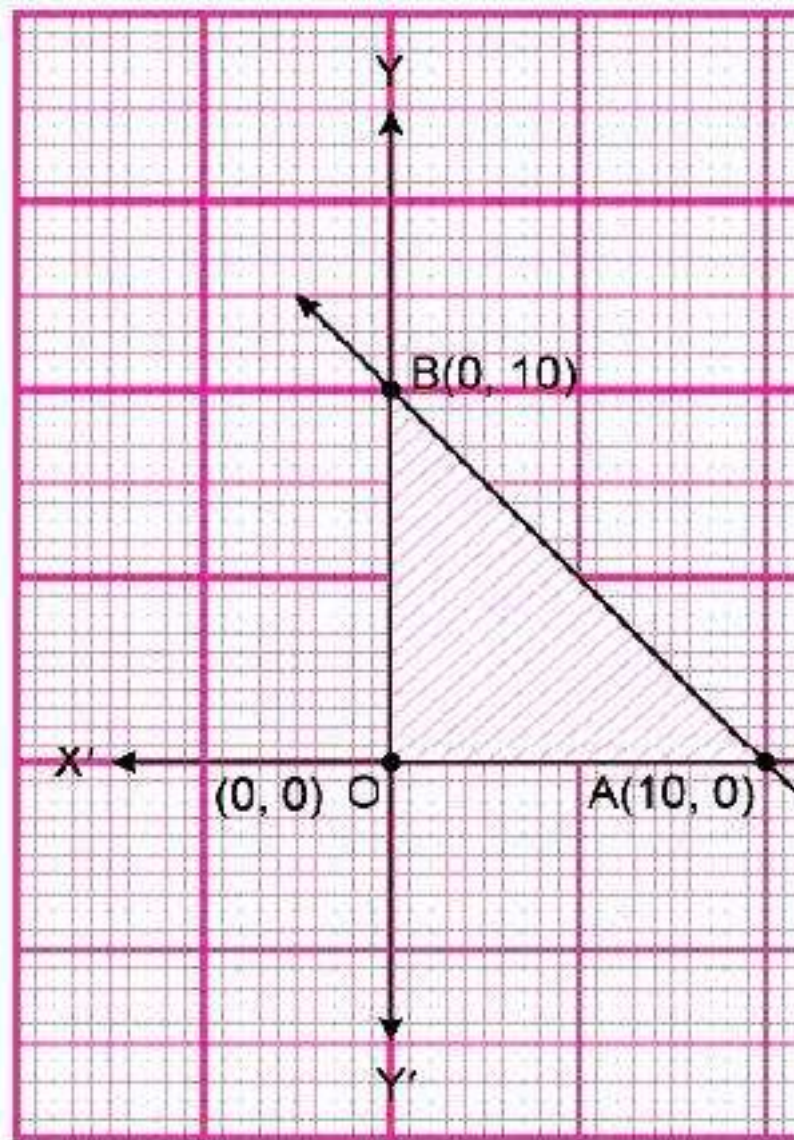
Answers

1. (b)

2. (b)

i.e., $Z = \lambda Z_1 + (1 - \lambda) Z_2$
gives optimal solution.
Option (b) is correct.

5.



Feasible region is shaded
 $B(0, 10)$
 $Z(0, 0) = 0$

Feasible region is shaded

$$\left(\frac{20}{3}, \frac{20}{3}\right), \text{ and } (0, 10)$$

$$Z(0, 0) = 0$$

$$Z(10, 0) = 10$$

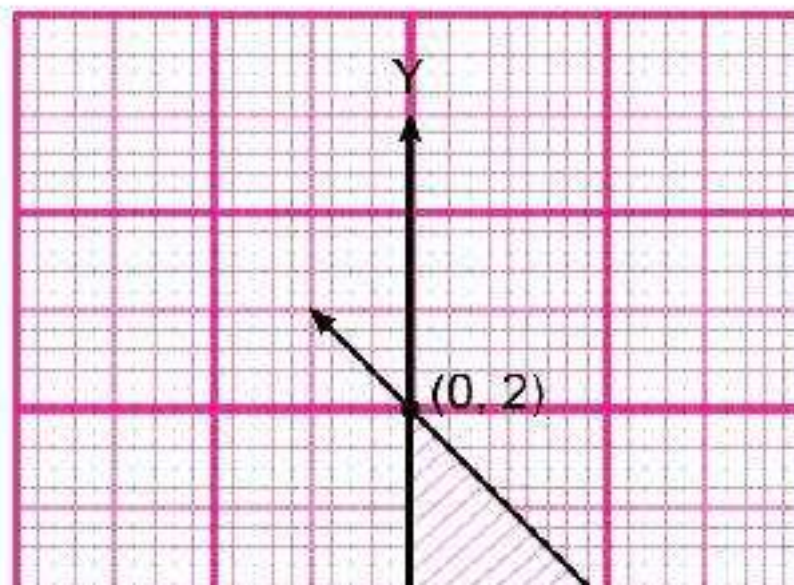
$$Z\left(\frac{20}{3}, \frac{20}{3}\right) = \frac{20}{3} + 20 =$$

$$Z(0, 10) = 30 \longleftarrow \text{Max}$$

$$Z_{\max} = 30 \text{ obtained at } (0, 10)$$

Option (b) is correct.

11.



Feasible region is shaded

$$(5, 0)$$

$$Z(0, 0) = 0$$

$$Z(0, 6) = 18$$

$$Z\left(\frac{24}{7}, \frac{24}{7}\right) = \frac{96}{7}, \frac{72}{7} = 13\frac{5}{7}$$

$$Z\left(5, \frac{4}{3}\right) = 20 + 4 = 24 \leftarrow$$

$$Z(5, 0) = 20$$

As Z has maximum value

So at any line segment j

Hence there are infinite

Hence option (c) is correct

14.



Feasible region is shaded
and $(0, 6)$.

$$Z(0, 0) = 0$$

$$Z(4, 0) = 12$$

$$Z(4, 3) = 12 + 15 = 27$$

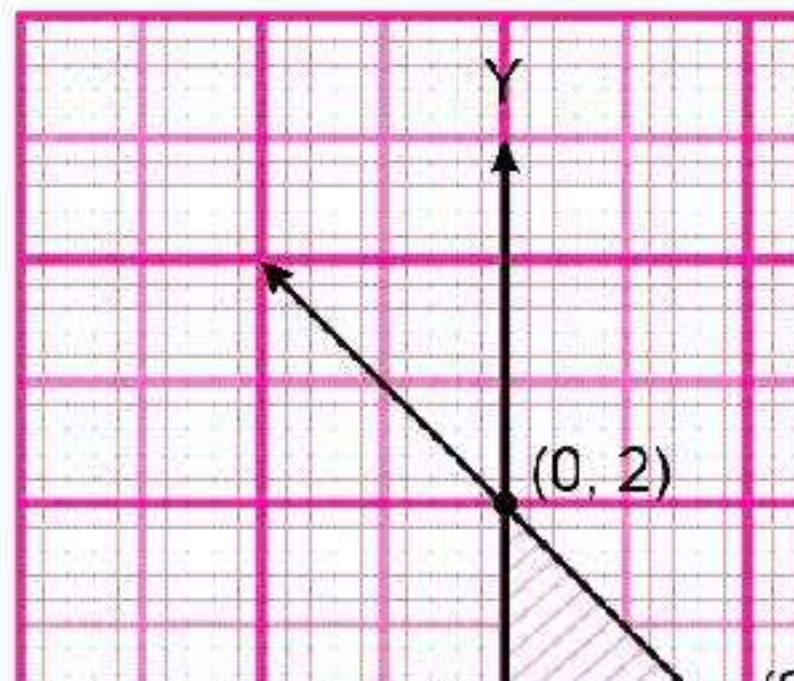
$$Z(2, 6) = 6 + 30 = 36 \leftarrow$$

$$Z(0, 6) = 30$$

Maximum value of Z is

Option (b) is correct.

16.



$\therefore$ Option (c) is the correct.

20. $Z = 2x + 3y$

$$\begin{aligned} Z(3, 2) &= 2 \times 3 + 3 \times 2 \\ &= 6 + 6 \\ &= 12 \end{aligned}$$

Option (c) is correct.

21. Since Z occurs maximum

Option (d) is correct.

22. Since (0, 0) does not satisfy

$$\text{i.e., } 0 + 0 \not\geq 1$$

$\Rightarrow$ (0, 0) not lie in feasible region

Option (b) is correct.

23. Feasible region for an L.P.P.

Option (c) is correct.

24.