Chapter-3
Linear Inequalities

MTP-March '20

1. On solving the inequalities $2x + 5y \leq 20, 3x + 2y \leq 12, x \leq 0, y \leq 0$, we get the following situation
   (a) (0, 0), (0, 4), (4, 0) and (20/11, 36/11)
   (b) (0, 0), (10, 0), (0, 6) and (20/11,36/11)
   (c) (0, 0), (0, 4), (4, 0) and (2, 3)
   (d) (0, 0), (10, 0), (0, 6) and (2, 3)

2. On the average experienced person does 5 units of work while a fresh one 3 units of work daily but the employer has to maintain an output of at least 30 units of work per day. This situation can be expressed as,
   (a) $5x + 3y \leq 30$
   (b) $5x + 3y > 30$
   (c) $5x+3y \geq 30\ x \geq 0, y \geq 0$
   (d) none of these

MTP-October '19

3. The solution set of the in equation $x + 2 > 0$ and $2x - 6 > 0$ is
   (a) $(-2, \infty)$ (b) $(3, \infty)$ (c) $(-\infty, 2)$ (d) $(-\infty, -2)$

4. A company produces two products A and B, each of which requires processing in two machines. The first machine can be used at most for 60 hours, the second machine can be used at most for 40 hours. The product A requires 2 hours on machine one and one hour on machine two. The product B requires one hour on machine one and two hours on machine two. Express above situation using linear inequalities.
   (a) $2x + y \leq 60$ and $x + 2y \leq 40$ and $x \geq 0, y \geq 0$. (b) $2x + y \geq 60$ and $x + 2y \geq 2$ and $x \geq 0, y \geq 0$.
   (c) $2x + y < 60$ and $x + 2y < 2$ and $x \geq 0, y \geq 0$. (d) $2x + y \geq 60$ and $x + 2y \leq 2$ and $x \geq 0, y \geq 0$.

MTP-March '19

5. On solving the inequalities $5x + y = \leq 100, x + y \leq 60, x \geq 0$ and $y \geq 0$, we get the following situation.
   (a) (0, 0), (20, 0), (10, 50) and (0,60)
   (b) (0, 0), (60, 0), (10, 50) and (0,60)
   (c) (0, 0), (20, 0), (0, 100) and (10,50)
   (d) none of these

MTP-Oct '20

6. The solution set of the equations $x+2 > 0$ and $2x - 6 > 0$ is
   (a) $(-2, \infty)$ (b) $(3, \infty)$ (c) $(-\infty, -2)$ (d) $(-\infty, -3)$

7. The solution space of the inequalities $2x + y \leq 10$ and $x - y \leq 5$:
   (i) includes origin
   (ii) includes the point (4,3)
   Which one is correct?
   (a) Only (i) (b) only (ii) (c) Both (i) and (ii) (d) None

MTP-March '21

8. The solution of the inequality $\frac{(5-2x)}{3} \leq \frac{x}{6} - 5$ is

(a) $x \geq 8$ (b) $x \leq 8$ (c) $x = 8$ (d) None of these

MTP-March'22

9. On solving the inequalities $5x + y \leq 100$, $x + y \leq 60$, $x \geq 0$, $y \geq 0$, we get the following situation:

(a) (0,0), (20,0), (10,50), & (0,60) (b) (0,0), (60,0), (10,50), & (0,60)

(c) (0,0), (20,0), (0,100) & (10,50) (d) none of these

10. The rules and regulations demand that the employer should employ not more than 5 experienced hands to 1 fresh one and this fact is represented by (Taking experienced person as x and fresh person as y)

(a) $y > \frac{x}{5}$ (b) $5y \leq x$ (c) $5y = x$ (d) none of these

MTP-Oct'21

11. A dealer has only ₹ 5760 to invest in fans (x) and sewing machines (y). The cost per unit of fan and sewing machine is ₹ 360 and ₹ 240 respectively. This can be shown by:

(a) $360x + 240y > 5760$ (b) $360x + 240y \leq 5760$

(c) $360x + 240y = 5760$ (d) none of these

12. The point of intersection between the lines $3x + 4y = 7$ and $4x - y = 3$ lie in the

(a) 1st quadrant. (b) 2nd quadrant. (c) 3rd quadrant (d) 4th quadrant.

MTP-2 Nov'22

13. $6x + y \geq 18$, $x + 4y \geq 12$, $2x + y \geq 10$, On solving the inequalities; we get:

(a) (0, 18), (12, 0), (4, 2) & (7, 6) (b) (3, 0), (0, 3), (4, 2) & (7, 6)

(c) (5, 0), (0, 10), (4, 2) & (7, 6) (d) (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)

MTP-1 Nov'22

14. The time required to produce a unit of product A is 3 hours and that for product B is 5 hours . The total available time is 220 hours . If x and y are the number of units of A and B that are produced then

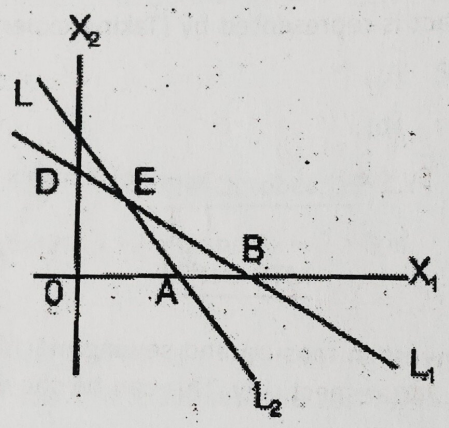
(a) $3x+2y=220$ (b) $3x+5y \geq 220, x \geq 0, y \geq 0$

(c) $3x+5y \leq 220, x \geq 0, y \geq 0$ (d) $5x+2y \geq 220, x \geq 0, y \geq 0$

MTP-2 June'22

15. The common region represented by the following in qualities

$L_1: x_1+x_2 < 4$: $L_2: 2x_1-x_2 > 6$



(a) OABC (b) outside of OAB (c) Δ BCE (d) Δ ABE

16. An employer recruits experienced (x) and fresh workmen(y) for his under the condition that he can not employ more than 11 people and y can be related by the inequality.

(a) $x+y \neq 11$ (b) $x+y \leq 11, x \geq 0, y \geq 0$

(c) $x+y \geq 11, x \geq 0, y \geq 0$ (d) none of these

ANSWER KEYS

1	(a)	2	(c)	3	(b)	4	(a)
5	(a)	6	(b)	7	(a)	8	(a)
9	(a)	10	(a)	11	(b)	12	(a)
13	(a)	14	(c)	15	(d)	16	(b)