

12. LINEAR PROGRAMMING (L.P.P)

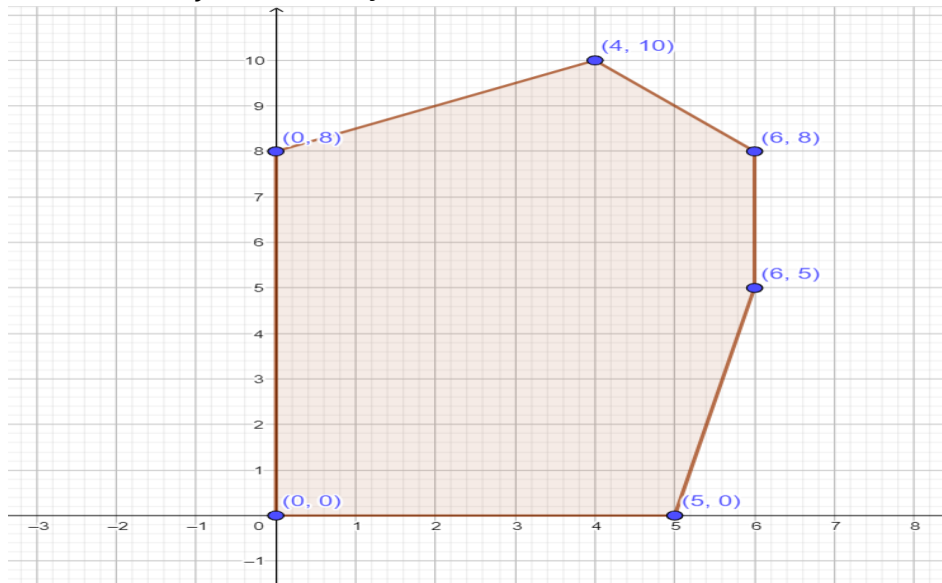
MCQ (Multiple Choice Questions):

- Objective function of a L.P.P is :
 - A quadratic polynomial
 - a constraint
 - A linear function to be optimised
 - none of these
- The optimal value of the objective function is attained at the points
 - Given by the intersection of inequalities with x-axis only.
 - Given by corner points of the feasible region.
 - Given by the intersection of inequalities with the axes only.
 - None of these.
- The solution set of the inequality $3x + 5y < 4$ is
 - Open half plane not containing the origin.
 - Whose xy-plane except the points lying on the line $3x + 5y = 4$.
 - Open half plane containing the origin.
 - None of these.
- The corner points of the feasible region determined by the system of Linear constraints are $(0,0)$, $(0,40)$, $(20,40)$, $(60,20)$, $(60,0)$. The objective function is $Z = 4x + 3y$.
Compare the quantity in column A and column B

Column A	Column B
Maximum of Z	325

 - The quantity in column A is greater.
 - The quantity in column B is greater.
 - The two quantities are equal.
 - The relationship cannot be determined on the basis of the information supplied.
- The point which does not lie in the half plane $2x + 3y - 12 \leq 0$ is
 - $(1,2)$
 - $(2,1)$
 - $(2,3)$
 - $(-3,2)$

6. The feasible solution for a LPP is shown in given figure. Let $Z = 3x - 4y$ Be the objective function. Minimum of Z occurs at :



- a) (0,0) b) (0,8) c) (5,0) d)(4,10)

7. Feasible region in the set of points which satisfy

- a) The objective functions b) some the given constraints
c) All of the given constraints d) None of these

8. Region represented by $x \geq 0, y \geq 0$ is

- a) First quadrant b)second quadrant
c) Third quadrant d) fourth quadrant

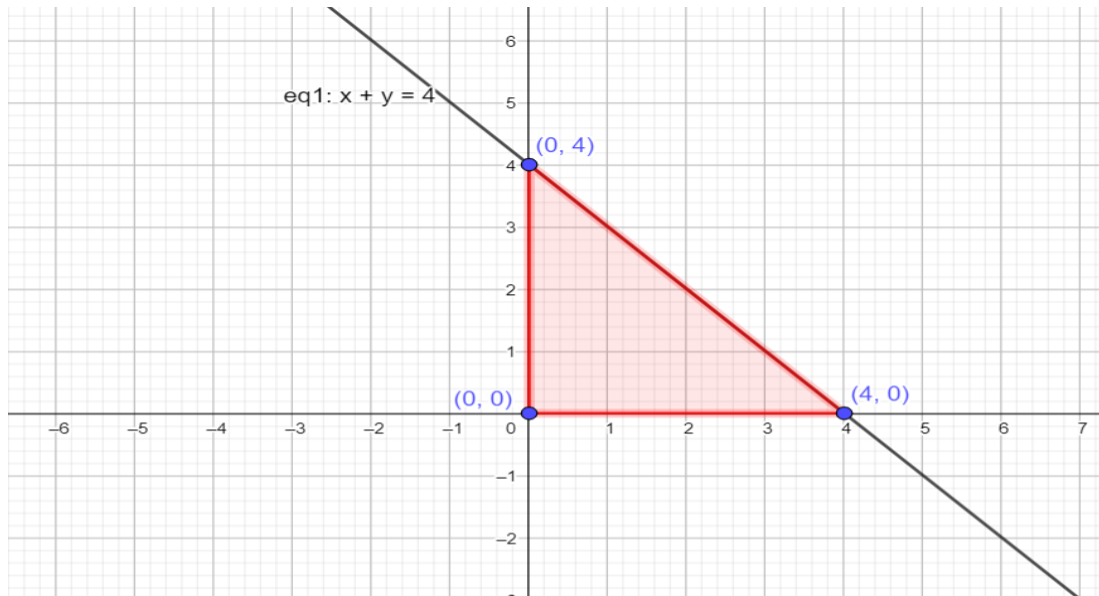
9. In maximization problem, optimal solution occurring at corner points yields the :

- a) Highest value of Z b) lowest value of Z
C) Mid values of Z d) mean value of Z

- 10.The inequality or equality or restrictions on the variables are called:

- a) Objective function b) constraints
c) Optimization d) None of these

11. The feasible region for a LPP is shown in the figure. The maximum $z = 3x + 4y$ Subject to the constraints $x + y \leq 4, x \geq 0, y \geq 0$. Is:



- a) 16 b) 12 c) 0 d) -8

12. The variables involved in the L.P.P are called :

- a) Depended variables b) Decision variables
c) Independent variables d) none of these

13. Linear programming is a method of finding anvalue of a linear function of several variables subject to the conditions that variables are Non-negative and satisfy a set of linear equations or inequations.

- a) Average value b) Maximum value
c) Minimum value d) optimal value

14. The region other than the feasible region is called :

- a) Infeasible region b) Bounded region
c) Unbounded region d) none of these

15. The common region determined by the constraints and non-negativity Restrictions of L.P.P is called:

- a) Bounded region b) Unbounded region
c) Feasible region d) none of these

16. The feasible region for an L.P.P is always aPolygon.

- a) Convex Polygon
- b) Concave polygon
- c) Regular polygon
- d) irregular polygon

17. If $Z = 7x + y$, subject to the constraints $5x + y \geq 5, x + y \geq 3, x \geq 0, y \geq 0$. The minimum value of Z occurs at:

- a) (3,0)
- b) $(\frac{1}{2}, \frac{5}{2})$
- c) (7,0)
- d) (0,5)

18. If $Z = 3x + y$, subject to the constraints $x + 3y \geq 3, x + y \geq 2, x \geq 0, y \geq 0$. The minimum value of Z occurs at:

- a) 9
- b) 7
- c) 10
- d) None of these

Assertion-and-Reason Type Questions:

Each question consists of two statements, namely, Assertion (A) and Reason(R). For selecting the correct answer, use the following code:

- a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).
 - b) Both Assertion (A) and Reason (R) are true and Reason (R) is a not a correct explanation of Assertion (A).
 - c) Assertion (A) is true and Reason (R) is false.
 - d) Assertion (A) is false and Reason (R) is true.
- 19.

Assertion (A)	Reason (R)
The objective function $Z = x + y$ Subject to the constraints: $3x + y \leq 6, x + 2y \leq 4,$ $x \geq 0, y \geq 0$ Has a maximum.	Let R be the feasible region for LPP and let $Z = ax + by$ be the Objective function. If R is bounded, then the objective function Z has both maximum or minimum value on R and each of these occurs at a corner point Of R.

20.

Assertion (A)	Reason (R)
The objective function $Z = 3x + 4y$ subject to the Constraints $x + y \leq 4, x \geq 0, y \geq 0$ has a maximum.	Let R be the feasible region for LPP and let $Z = ax + by$ be the Objective function. If R is bounded, then the objective function Z has both maximum or minimum value on R and each of these occurs at a corner point Of R.

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