

Questions Bank
Mathematics Part II
Chapter 5

A. MCQs.

1. A vertical line divides the plane into
 - a. Left half plane
 - b. Right half plane
 - c. Both (a) and (b)
 - d. None of these

2. A non-vertical line divides the plane into
 - a. Upper half plane
 - b. Lower half plane
 - c. Both (a) and (b)
 - d. None of these

3. The linear equation formed out of the linear inequality is called
 - a. Linear equation
 - b. Associated equation
 - c. Both a and b
 - d. None of these

4. A point of a solution region where two of its boundary lines intersect, is called
 - a. Corner point
 - b. Vertex
 - c. Both (a) and (b)
 - d. None of these

5. The system of linear inequalities involved in the problem concerned are called
 - a. Simultaneous inequalities
 - b. Feasible inequalities
 - c. Problem constraints
 - d. None of these

6. The solution region restricted to the first quadrant is called
 - a. Feasible region
 - b. Objective region
 - c. Solution region
 - d. None of these

7. Each point of the feasible region is called
 - a. Feasible solution
 - b. Objective solution
 - c. Optimal solution
 - d. None of these

8. A function that is to be maximized or minimized is called
 - a. Feasible function
 - b. Objective function
 - c. Solution function
 - d. None of these

9. The feasible solution that maximizes or minimizes the objective function is called
 - a. Optimal solution
 - b. Solution
 - c. Both (a) and (b)
 - d. None of these

10. $(0,1)$ is solution of inequality:
 - a. $9x + 2y > 8$
 - b. $-x + 3y < 0$
 - c. $3x + 5y > 6$
 - d. $3x + 4y > 4$

B. Short Questions.

1. Graph the inequality

$$x + 3y > 6$$

2. Graph the inequality

$$2x + 4y \leq 8$$

3. State the theorem of Linear Programming.

4. Define feasible region.

5. Describe feasible solution set.

6. What is an optimal solution?

7. Define corner points.

8. Graph the following inequalities and indicate their solution set by shading

$$4x - 3y \leq 12$$

$$x \geq -\frac{3}{2}$$

9. Define non-negative constraints. What role they play in real life?

10. Define convex region.

C. Long Questions

1. Graph the feasible solution region of the following system of linear inequalities and find the corner points

$$x + y \leq 5$$

$$2x + y \leq 2$$

$$y \geq 0$$

2. Graph the feasible solution region of the following system of linear inequalities and find the corner points

$$2x + 3y \leq 18$$

$$x + 4y \leq 12$$

$$3x + y \leq 12$$

$$x \geq 0$$

$$y \geq 0$$

3. Maximize $z = 2x + y$ subject to the constraints.

$$x + y \geq 3$$

$$7x + 5y \leq 35$$

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

4. Graph the feasible solution region of the following system of linear inequalities and find the corner points

$$\begin{aligned}2x - 3y &\leq 6 \\2x + 3y &\leq 12 \\x &\geq 0 \\y &\geq 0\end{aligned}$$

5. Maximize $f(x, y) = 2x + 5y$
subject to the constraints

$$\begin{aligned}2y - x &\leq 8 \\x - y &\leq 4 \\x &\geq 0 \\y &\geq 0\end{aligned}$$

6. Maximize $f(x, y) = 2x + 3y$
subject to the constraints

$$\begin{aligned}3x + 4y &\leq 12 \\2x + y &\leq 4 \\2x - y &\leq 4 \\x &\geq 0 \\y &\geq 0\end{aligned}$$

Answer Keys (MCQs):

1. a

2. c

3. b

4. c

5. c

6. a

7. a

8. b

9. a

10.a