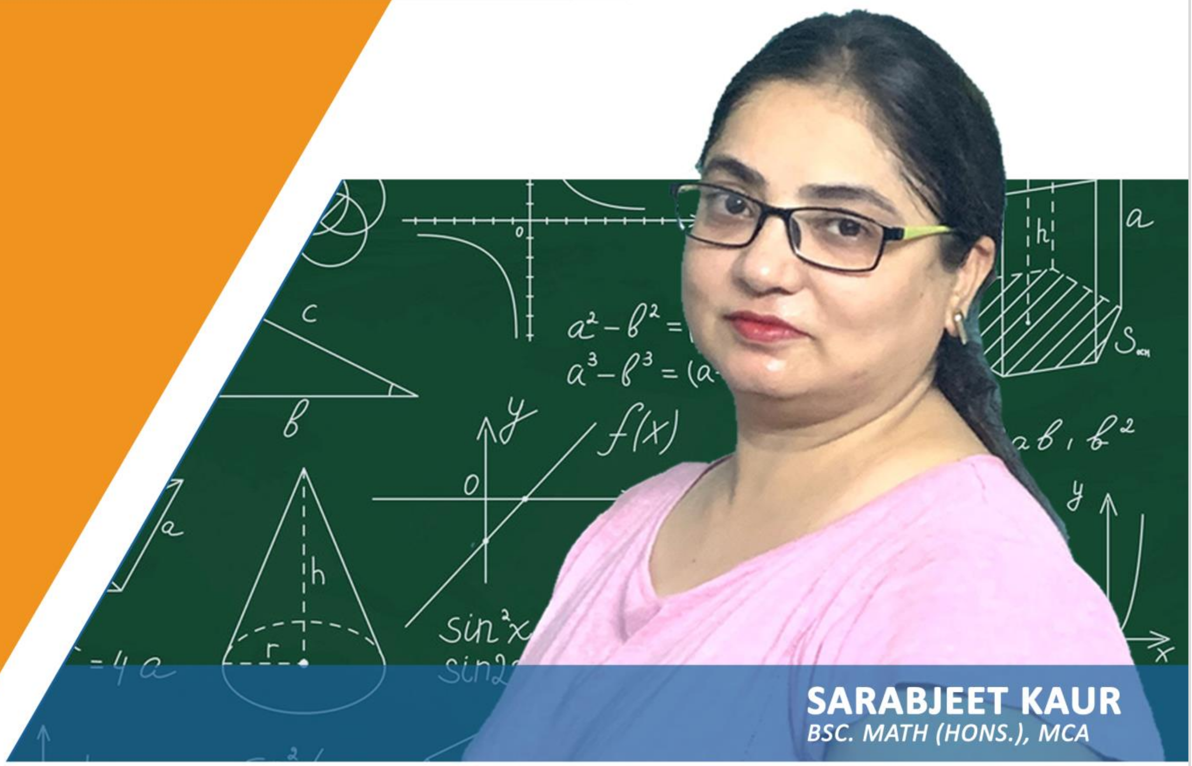
CAREER+ ACADEMY



GRADE 12TH MATHS

CHAPTER 12

Linear Programming Problem

www.careerplusacademy.com careerplusacademy@gmail.com

/careerplusacademy /in/sarabkaur /careerplusacademy +91-987-111-5373

MCQ Questions for Class 12 Maths Chapter 12 Linear Programming with answers

1. Let Z = ax + by is a linear objective function. Variables x and y are called ____ variables.

(a) Independent

(b) Continuous

(c) Decision

(d) Dependent

► (c) Decision

2. How many of the following points satisfy the inequality $2x – 3y > -5$?

(1, 1), (-1, 1), (1, -1), (-1, -1), (-2, 1), (2, -1), (-1, 2) and (-2, -1)

(a) 2

(b) 4

(c) 6

(d) 5

► (d) 5

3. A feasible solution of a LPP if it also optimizes the objective function is called

(a) Optimal feasible solution

(b) Optimal solution

(c) Feasible solution

(d) None of these

► (a) Optimal feasible solution

4. In a LPP, the objective function is always

(a) cubic

(b) quadratic

(c) Linear

(d) constant

► (c) Linear

5. The linear inequalities or equations or restrictions on the variables of a linear programming problem are called ___ The conditions $x \geq 0$, $y \geq 0$ are called ___

(a) Objective functions, optimal value

(b) Constraints, non-negative restrictions

(c) Objective functions, non-negative restrictions

(d) Constraints, negative restrictions

► (b) Constraints, non-negative restrictions

6. A toy company manufactures two types of toys A and B. Demand for toy B is atmost half of that if type A. Write the corresponding constraint if x toys of type A and y toys of type B are manufactured.

(a) $x/2 \leq y$

(b) $2y - x \geq 0$

(c) $x - 2y \geq 0$

(d) $x < 2y$

► (c) $x - 2y \geq 0$

7. Objective function of a LPP is

(a) function to be optimized

(b) A constraint

(c) Relation between variables

(d) Equation in a line

► (a) function to be optimized

8. Minimise $Z = 13x - 15y$ subject to the constraints : $x + y \le 7$, $2x - 3y + 6 \ge 0$, $x \ge 0$, $y \ge 0$.

(a) – 23

(b) – 32

(c) – 30

(d) – 34

► (c) – 30

9. Infeasibility means that the number of solutions to the linear programming models that satisfies all constraints is

(a) At least 1

(b) An infinite number

(c) Zero

(d) At least 2

► (c) Zero

10. Shape of the feasible region formed by the following constraints is $x + y \le 2$, $x + y \ge 5$, $x \ge 0$, $y \ge 0$

(a) No feasible region

(b) Triangular region

(c) Unbounded solution

(d) Trapezium

► (a) No feasible region

11. The set of all feasible solutions of a LPP is a ____ set.

(a) Concave

(b) Convex

(c) Feasible

(d) None of these

► (b) Convex

12. The optimum value of the objective function is attained at the points

(a) Corner points of feasible region

(b) Any point of the feasible region

(c) On x-axis

(d) On y-axis

► (a) Corner points of feasible region

13. Maximise the function Z = 11x + 7y, subject to the constraints: x ≤ 3, y ≤ 2,x ≥ 0, y ≥ 0.

(a) 49

(b) 50

(c) 47

(d) 48

► (c) 47

14. Let R be the feasible region for a linear programming problem and let Z = ax + by be the objective function. If R is bounded, then the objective function Z has both a maximum and a minimum value on R and

(a) each of these occurs at a corner point (vertex) of R.

(b) each of these occurs at themidpoints of the edges of R

(c) each of these occurs at the centre of R.

(d) each of these occurs at some points except corner points of R.

► (a) each of these occurs at a corner point (vertex) of R.

15. Minimize Z = 3x + 5y such that x + 3y ≥ 3, x + y ≥ 2, x, y ≥ 0.

(a) Minimum Z = 7 at 3/2,1/2

(b) Minimum Z = 8 at 3/2,1/2

(c) Minimum Z = 9 at 3/2,1/2 110 V 60 Hz

(d) Minimum Z = 10 at 3/2,1/2

► (a) Minimum Z = 7 at 3/2,1/2

16. A maximum or a minimum may not exist for a linear programming problem if

(a) The feasible region is bounded

(b) if the constraints are non linear

(c) if the objective function is continuous

(d) The feasible region is unbounded

► (d) The feasible region is unbounded

17. Let R be the feasible region for a linear programming problem, and let Z = ax + by be the objective function. If R is bounded, then

(a) the objective function Z has only a maximum value on R

(b) the objective function Z has only a minimum value on R

(c) the objective function Z has both a maximum and a minimum value on R

(d) the objective function Z has no minimum value on R

► (c) the objective function Z has both a maximum and a minimum value on R

18. In linear programming feasible region (or solution region) for the problem is

(a) The common region determined by all the constraints including the non – negative constraints $x \geqslant 0, y \geqslant 0$

(b) The common region determined by all the $x \geqslant 0$ and the objective function

(c) The common region determined by all the objective functions including the non – negative constraints $x \geqslant 0, y \geqslant 0$

(d) The common region determined by all the $x \geqslant 0, y \geqslant 0$ and the objective function

► (a) The common region determined by all the constraints including the non – negative constraints $x \geqslant 0, y \geqslant 0$

19. In linear programming problems the optimum solution

(a) satisfies a set of piecewise – linear inequalities (called constraints)

(b) satisfies a set of linear inequalities (called linear constraints)

(c) satisfies a set of quadratic inequalities (calledconstraints)

(d) satisfies a set of cubic inequalities (calledconstraints)

► (b) satisfies a set of linear inequalities (called linear constraints)

20. Find the maximum value of $z = 3x + 4y$ subject to constraints $x + y \leq 4$, $x \geq 0$ and $y \geq 0$

(a) 12

(b) 16

(c) 7

(d) 14

► (b) 1