CUET (UG) – MATHEMATICS

Chapter Test - Section B2: Applied Mathematics -Unit VIII: Linear Programming

General Instructions

1. Total Questions: **20**
2. Duration: **60 Minutes**
3. All questions are compulsory.
4. Each question carries **5 marks**.
5. For each correct answer: **+5 marks**.
6. For each incorrect answer: **-1 mark**.
7. No negative marking for unanswered questions.
8. Use of calculator or electronic devices is strictly prohibited.
9. Choose the most appropriate answer from the given options.

1. In a Linear Programming Problem, the objective function is always:
   (A) A quadratic function
   (B) A linear function to be optimized
   (C) A constant value
   (D) An inequality

2. The region containing all the points that satisfy all the constraints of an LPP is called the:
   (A) Infeasible region
   (B) Optimal region
   (C) Feasible region
   (D) Unbounded region

3. Which of the following is a non-negativity constraint in a standard LPP?
   (A) $x + y \leq 0$
   (B) $x \geq 0, y \geq 0$
   (C) $x = 0, y = 0$
   (D) $x - y \geq 0$

4. For the objective function $Z = 3x + 4y$, the corner points of the feasible region are (0, 0), (4, 0), (2, 3), and (0, 5). The maximum value of Z is:
   (A) 12
   (B) 18
   (C) 20
   (D) 17

5. If a feasible region is unbounded, then a maximum value of the objective function:
   (A) Must exist
   (B) May or may not exist
   (C) Is always zero
   (D) Is at the origin

6. The optimal value of the objective function in an LPP occurs at:
   (A) Any point inside the feasible region
   (B) The origin only
   (C) At least one of the corner points of the feasible region
   (D) Any point on the Y-axis

7. In an LPP, if the constraints are $x + y \leq 5$, $x \geq 0, y \geq 0$, the feasible region is a:
   (A) Square
   (B) Triangle
   (C) Circle
   (D) Infinite strip

8. If the objective function $Z = ax + by$ has the same maximum value at two different corner points, then:
   (A) There is no optimal solution
   (B) Every point on the line segment joining these two points is also an optimal solution
   (C) The origin is the only solution
   (D) Only those two points are optimal solutions

9. The constraint $2x + 3y \leq 6$ represents:
   (A) A line passing through origin
   (B) A half-plane containing the origin
   (C) A half-plane not containing the origin
   (D) A point in the first quadrant

10. A diet is to contain at least 10 units of Vitamin A. If Food X contains 2 units/kg and Food Y contains 1 unit/kg, the constraint is:
    (A) $2x + y \leq 10$
    (B) $x + 2y \geq 10$
    (C) $2x + y \geq 10$
    (D) $x + y = 10$

11. Which of the following is not a linear constraint?
    (A) $x + y \leq 10$
    (B) $2x - 3y = 5$
    (C) $xy \leq 4$
    (D) $y \geq 2$

12. In a maximization problem, if the feasible region is empty, the problem has:
    (A) Infinite solutions
    (B) A unique solution at (0,0)
    (C) No feasible solution
    (D) An unbounded solution

13. For $Z = 5x + 10y$, subject to $x + 2y \leq 120, x + y \geq 60, x, y \geq 0$, the minimum value of Z occurs at:
    (A) (60, 0)
    (B) (0, 60)
    (C) (120, 0)
    (D) (0, 120)

14. The point which does not satisfy the constraint $x + 2y \leq 10$ is:
    (A) (0, 0)
    (B) (2, 2)
    (C) (4, 4)
    (D) (1, 1)

15. A Linear Programming Problem is used to find:
    (A) Roots of quadratic equations
    (B) Best possible outcome under given constraints
    (C) The area of a circle
    (D) The value of Pi

16. If the corner points of a feasible region are (0,2), (3,0), and (0,0), the area of the feasible region is:
    (A) 6 sq. units
    (B) 3 sq. units
    (C) 5 sq. units
    (D) 1.5 sq. units

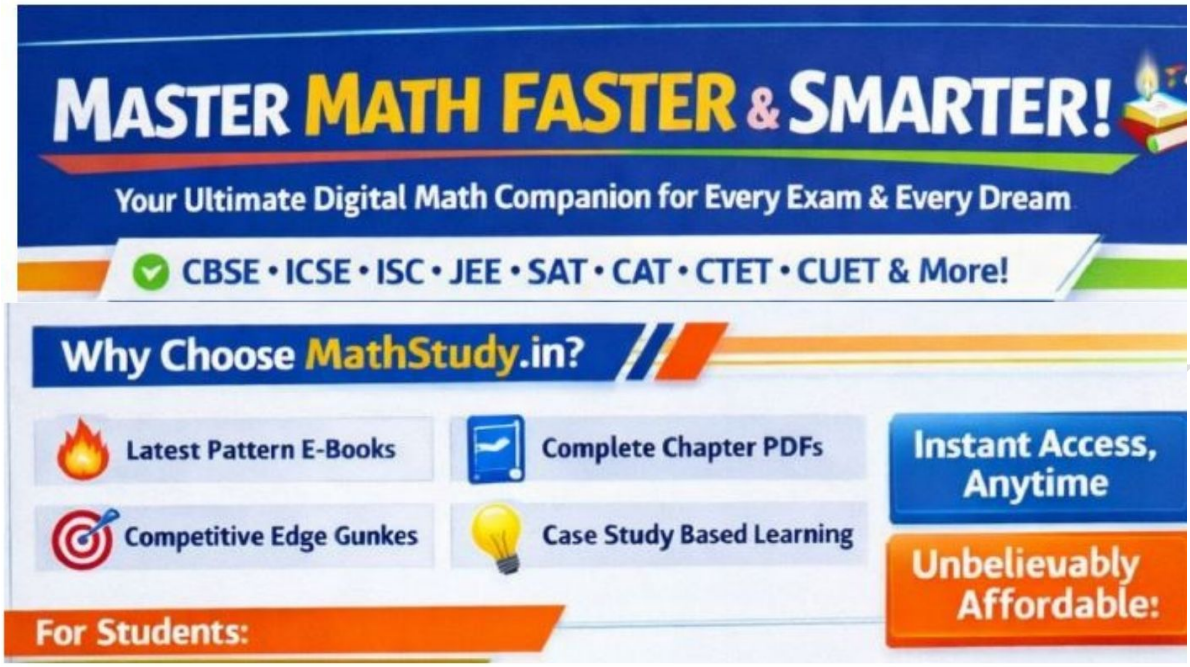
17. The intersection of $x + y = 4$ and $2x - y = 2$ is the point:
    (A) (2, 2)
    (B) (3, 1)
    (C) (1, 3)
    (D) (0, 4)

18. In the formulation of LPP, the variables x and y are called:
    (A) Dependent variables
    (B) Decision variables

(C) Slack variables
(D) Random variables

19. If the objective function $Z = x + y$, and the feasible region is bounded by $x \leq 2, y \leq 2, x \geq 0, y \geq 0$, the maximum Z is:
(A) 2
(B) 4
(C) 0
(D) 8

20. A constraint $x - y \geq 0, x \geq 0, y \geq 0$ means the feasible region lies:
(A) Above the line $y = x$
(B) Below or on the line $y = x$
(C) Only on the X-axis
(D) Only on the Y-axis



Special Features

- **Board-Specific** – CBSE, ICSE, ISC, State Boards
- **Exam-Focused** – JEE, SAT, CAT, CTET, CUET, NTSE
- **Grade-Wise** – Class 6 to 12
- **Bilingual Options** – English & Hindi Medium Support
- **Printable & Shareable** – Use offline, anytime

How to Order:

Visit : https://www.mathstudy.in
Browse by Exam, Class, or Topic
Add to Cart & Checkout

Contact & Support:

Email: admin@mathstudy.in
WhatsApp Support Available : +91-+91 92118 65759

Why Wait? Empower your learning journey, save time, and achieve your dreams!

Explore & Start Learning Today:
https://www.mathstudy.in – Premium eBooks for success
https://www.udgamwelfarefoundation.com – Free PDFs, practice tests, & guida

MathStudy.in — Empowering Learners, Enabling Educators, Encouraging Excellence.
Digital Learning | Affordable Excellence | Trusted by Thousands