



MATHS

BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

LINEAR PROGRAMMING [APPENDIX-2]

Exercise 1

1. If $2x + y \geq 10$, $x + 2y \geq 10$, then the least value of $F=x+y$ is

A. $10/3$

B. $20/3$

C. 10

D. 20

Answer: B



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2. If $x \geq 0$, $y \geq 0$, $2x + y \leq 10$, $x + 2y \geq 10$, then the minimum value of $F=x+y$ is

A. 5

B. 10

C. $20/3$

D. $10/3$

Answer: A



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3. If $x \geq 0, y \geq 0, 2x + 2y \leq 10, x + 2y \leq 10$, then the greatest value of $F=x+y$ is

A. 5

B. $20/3$

C. $5/2$

D. 15

Answer: B



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4. If $2x + y \leq 8$, $y \leq 4$, $x \leq 3$, $x \geq 0$, $y \geq 0$, then the maximum value of $f=2x+y$ is

A. 4

B. 8

C. 12

D. 16

Answer: B



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5. If $x + y \leq 50$, $3x + y \leq 90$, $x \geq 0$, $y \geq 0$ then the maximum value of $f=4x+y$ is

A. 120

B. 60

C. 100

D. 40

Answer: A



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6. If $8x + 5y \leq 40$, $5x + 4y \leq 40$, $x \geq 0$, $y \geq 0$ then the maximum value of $f=3x+2y$ is

A. 11

B. 16

C. 18

D. 24

Answer: C



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7. If $8x + 5y \leq 40$, $4x + 3y \geq 12$, $x \geq 0$, $y \geq 0$ then

the maximum value of $f=3x+2y$ is

A. 5

B. 12

C. 24

D. 25

Answer: C



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8. If $7x + 4y \leq 28$, $2y \leq 7$, $x \geq 0$ then the maximum value of $f=4x-2y$ is

A. 16

B. 28

C. 42

D. 56

Answer: A



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9. If $2x + 3y \leq 12$, $3x + y \leq 12$, $x \geq 0$, $y \geq 0$ then

the maximum value of $f=5x+7y$ is

A. 6

B. 12

C. 36

D. $204/7$

Answer: D



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10. If $x \geq 0$, $y \geq 0$, $2 \leq x + y \leq 8$, $2 + y \leq 10$ then the maximum value of $F=5x+7y$ is

A. 14

B. 25

C. 52

D. 56

Answer: D



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11. If $2x + y \geq 10$, $x + 2y \geq 10$, $x \geq 0$, $y \geq 0$ then the minimum value of $f=x+y$ is

A. 2

B. 5

C. 10

D. $20/3$

Answer: D



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12. If $x + y \geq 6$, $2x + y \geq 8$, $x \geq 0$, $y \geq 0$ then the minimum value of $f=x+y$ is

A. 6

B. 8

C. 14

D. 48

Answer: A



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13.

If

$$2x - y \geq 2, x - 2y \leq 2, x + y \leq 5, x \geq 0, y > 0$$

then the minimum value of $f=x-y$ is

A. 1

B. 2

C. 5

D. $-1/3$

Answer: D



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14. If $x + y \geq 1$, $x \geq y$, $0 \leq x \leq 1$, $y \geq 0$ then the minimum value of $f=3x+2y$ is

A. 1

B. 2

C. 2.5

D. 3

Answer: C



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15.

If

$$x + y \leq 800, 2x + y \leq 1000, 0 \leq x \leq 400, 0 \leq y \leq 700$$

then the minimum value of $f=4x+2y$ is

A. 1000

B. 1600

C. 400

D. 8000

Answer: B



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16. If $x + 2y \geq 10$, $3x + 4y \leq 24$, $x \geq 0$, $y \geq 0$ then the minimum value of $f=200x+500y$ is

A. 2300

B. 2500

C. 2700

D. 3000

Answer: A



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17.

If

$$x \geq 0, y \geq 0, 2x + y \geq 0, x + 2y \geq 10, x + y \leq 10,$$

then the minimum value of $f=x-y$ is

A. 5

B. 10

C. $5/2$

D. $10/3$

Answer: B



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18. If $x \geq 0$, $y \geq 0$, $x + y \leq 1$, $3x + y \geq 1$ then the minimum value of $f=2x+3y$ is

A. 2

B. 3

C. $\frac{4}{3}$

D. $\frac{1}{3}$

Answer: B



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19. If $x + 3y \leq 60$, $x + y \geq 10$, $x \leq y$, $x \geq 0$, $y \geq 0$

then the minimum value of $f=2x+9y$ is

- A. 60
- B. 90
- C. 120
- D. 180

Answer: D



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20. If $x \geq 0$, $y \geq 0$, $2x + 3y \leq 12$, $3x + y \leq 12$, then the minimum value of $f=5x+7y$ is

A. 0

B. $204/7$

C. 84

D. 12

Answer: A



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21. If $x \geq 0$, $y \geq 0$, $2x + 3y \leq 10$ and $x + 2y \geq 10$

then the minimum value of $f=2x+3y$ is

A. $10/3$

B. $20/3$

C. 20

D. $50/3$

Answer: D



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22. If $x \geq 0$, $y \geq 0$, $2x + y \leq 10$ and $x + 2y \geq 10$

then the minimum value of $f=x+y$ is

A. 4

B. 5

C. 0

D. 2

Answer: D



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23.

Given

$$x \geq 0, 2x + y \geq 10, x + 2y \leq 10 \text{ and } x + y \leq 10,$$

then the maximum value of $F=(x-y)$ is

A. $20/3$

B. 10

C. 6

D. 5

Answer: B



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24. If $x \geq 0, y \geq 0, 2x \leq x + y \leq 8, 2x + y \leq 10,$

then the minimum value of $F=5x+7y$ is

A. 10

B. 14

C. 6

D. 5

Answer: A



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25. Which point maximise the objective function

$$P = \frac{x}{4} + \frac{9y}{20} ?$$

A. (0,0)

B. (0,150)

C. -90150

D. (160,0)

Answer: C



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26. Which of the following maximize the objective function $P=x/2+y/2$ is ?

A. (3,0)

B. (2,0)

C. (3,2)

D. (2,3)

Answer: D



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27. Which of the following points maximise the objective function $P=x/2+y/3$?

A. (4,0)

B. (0,6)

C. (2,3)

D. (3,2)

Answer: D



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28. Which of the following is minimize the objective function $P=2x/5+3x/7$ is

A. (5,0)

B. (0,5)

C. (5/2,7/3)

D. (2/5,3/7)

Answer: D



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29. The vertices of a polygon in a feasible region are $(2,-3)$, $(3,3)$ and $(-4,2)$, The maximum value of the objective function $F=2x+3y$ is

A. 10

B. 12

C. 15

D. 25

Answer: C



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30. A shopkeeper sells not more than 15 bush shirts of two colours. At least twice as many white ones are sold as green ones. If the profit on each of the white be Rs. 5 and that of green be Rs. 7.50. The numbers of green shirts to be sold to get maximum profit is

A. 5

B. 7

C. 10

D. 15

Answer: C



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31. In the above problem, the number of white shirts to be sold to get maximum profit is

A. 5

B. 7

C. 10

D. 15

Answer: A



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32. A furniture dealer deals only two items, tables and chairs. He has Rs. 500 to invest and a storage capacity for 60 pieces. A table costs him Rs. 250 and chair Rs. 50. He can sell a table for a profit of Rs. 50 and a chair for a profit of Rs. 15. The number of tables and chairs respectively to get maximum profit are

A. 10,50

B. 20,50

C. 10,20

D. 20,60

Answer: A



33. A manufacturer has 75kg of cashew nuts and 120kg of peanuts. These are mixed and packed into 1 kg packages as follows. A low grade mixture that containing 250gm of cashew and 750gms of peanuts, a high grade mixture that contains 500 gms of cashew and 500 gms of peanuts. On the low grade mixture the manufacturer gets a profit of 25 paise per package, while on the high grade the profit is 45 paise per package. How many packages of each mixture should be made to obtain a maximum profit?

A. 90105

B. 90160

C. 105150

D. 90150

Answer: A



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