Unit 10 - Week 9

Course outline

Assignment 9

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-10-02, 23:59 IST.

1) *The following L. P. P.* — *1 point*

$Max.\ \ Z = 2x + y$

subject to

$x + 2y \leq 10$
$x + y \leq 6$
$x - y \leq 2$
$x - 2y \leq 1$

and $x, y \geq 0$

has the optimal value

- 8
- 10
- $\frac{31}{3}$
- 12

No, the answer is incorrect.
Score: 0
Accepted Answers:
10

2) *The following L. P. P.* — *1 point*

$Max.\ \ Z = 6x - 2y$

subject to

$2x - y \leq 2$
$x \leq 3$

and $x,\ y \geq 0$ *has*

- *an unique solution*
- *an unbounded solution*
- *infinite number of solutions*
- *no solution*

No, the answer is incorrect.
Score: 0
Accepted Answers:
an unbounded solution

3) *The following L. P. P.* — *1 point*

$Min.\ \ Z = x + y$

subject to

$5x + 10y \leq 50$
$x + y \geq 1$
$y \leq 4$

and $x, y \geq 0$ *has*

- *an unique solution*
- *no solution*
- *an unbounded solution*
- *infinite number of solutions*

No, the answer is incorrect.
Score: 0
Accepted Answers:
infinite number of solutions

4) *The following L. P. P.* — *1 point*

$Max.\ \ Z = 40x + 60y$

subject to

$2x + y \geq 70$
$x + y \geq 40$
$x + 3y \geq 90$

and $x, y \geq 0$ *has*

- *infinite number of solutions*
- *an unbounded solution*
- *no solution*
- *an unique solution*

No, the answer is incorrect.
Score: 0
Accepted Answers:
an unbounded solution

5) *The standard form of the following LPP is* — *1 point*

$Max.\ Z = 3x_1 + 4x_2 + x_3$

Subject to

$x_1 + x_2 \leq 2$
$x_1 + x_2 + 2x_3 \geq 3$
$2x_1 + x_3 \leq 4$
and $x_1,\ x_2 \geq 0,$

is

- $Max.\ Z = 3x_1 + 4x_2 + x_3' - x_3''$
  $x_1 + x_2 + s_1 = 2$
  $x_1 + x_2 + 2x_3' - 2x_3'' - s_2 = 3$
  $2x_1 + x_3' - x_3'' + s_3 = 4$
  and $x_1,\ x_2,\ x_3',\ x_3'',\ s_1,\ s_2,\ s_3 \geq 0.$
- $Max.\ Z = 3x_1 + 4x_2 + x_3' - x_3''$
  $x_1 + x_2 + s_1 = 2$
  $x_1 + x_2 + 2x_3' + 2x_3'' - s_2 = 3$
  $2x_1 + x_3' - x_3'' + s_3 = 4$
  and $x_1, x_2, x_3', x_3'', s_1, s_2, s_3 \geq 0.$
- $Max.\ Z = 3x_1 + 4x_2 + x_3' - x_3''$
  $x_1 + x_2 - s_1 = 2$
  $x_1 + x_2 + 2x_3' - 2x_3'' - s_2 = 3$
  $2x_1 + x_3' + x_3'' + s_3 = 4$
  and $x_1, x_2, x_3', x_3'', s_1, s_2, s_3 \geq 0.$
- $Max.\ Z = 3x_1 + 4x_2 + x_3$
  $x_1 + x_2 + s_1 = 2$
  $x_1 + x_2 + 2x_3 - s_2 = 3$
  $2x_1 + x_3 - s_3 = 4$
  and $x_1, x_2, x_3, s_1, s_2, s_3 \geq 0.$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$Max.\ Z = 3x_1 + 4x_2 + x_3' - x_3''$
$x_1 + x_2 + s_1 = 2$
$x_1 + x_2 + 2x_3' - 2x_3'' - s_2 = 3$
$2x_1 + x_3' - x_3'' + s_3 = 4$
and $x_1,\ x_2,\ x_3',\ x_3'',\ s_1,\ s_2,\ s_3 \geq 0.$

6) *The standard form of following L. P. P.* — *1 point*

$Min.\ Z = 2x_1 + x_2$

subject to

$x_1 - x_2 - x_3 = -2$
$x_1 + 2x_2 + x_4 = 1$
$x_1 + x_2 = 6$
and $x_1, x_3, x_4 \geq 0,$

is

- $Max.\ Z = -2x_1 - x_2' + x_2''$
  $-x_1 + x_2' - x_2'' + x_3 = 2$
  $x_1 + 2x_2' + 2x_2'' + x_4 = 1$
  $x_1 + x_2' - x_2'' = 6$
  and $x_1, x_2', x_2'', x_3, x_4 \geq 0.$
- $Max.\ Z = -2x_1 - x_2' + x_2''$
  $-x_1 + x_2' - x_2'' + x_3 = 2$
  $x_1 + 2x_2' - 2x_2'' + x_4 = 1$
  $x_1 + x_2' + x_2'' = 6$
  and $x_1, x_2', x_2'', x_3, x_4 \geq 0.$
- $Max.\ Z = -2x_1 - x_2' + x_2''$
  $-x_1 + x_2' - x_2'' + x_3 = 2$
  $x_1 + 2x_2' - 2x_2'' + x_4 = 1$
  $x_1 + x_2' - x_2'' = 6$
  and $x_1, x_2', x_2'', x_3, x_4 \geq 0.$
- $Max.\ Z = -2x_1 - x_2' + x_2''$
  $x_1 - x_2' + x_2'' - x_3 = 2$
  $x_1 + 2x_2' - 2x_2'' + x_4 = 1$
  $x_1 + x_2' - x_2'' = 6$
  and $x_1, x_2', x_2'', x_3, x_4 \geq 0.$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$Max.\ Z = -2x_1 - x_2' + x_2''$
$-x_1 + x_2' - x_2'' + x_3 = 2$
$x_1 + 2x_2' - 2x_2'' + x_4 = 1$
$x_1 + x_2' - x_2'' = 6$
and $x_1, x_2', x_2'', x_3, x_4 \geq 0.$

7) *The maximum value of the objective function of the following L. P. P.* — *1 point*

$Max.\ \ Z = 2x_1 + 5x_2 + 7x_3$

subject to

$3x_1 + 2x_2 + 4x_3 \leq 100$
$x_1 + 4x_2 + 2x_3 \leq 100$
$x_1 + x_2 + 3x_3 \leq 100$

and $x_1,\ x_2,\ x_3 \geq 0$

using simplex method, is equal to

- 200
- 180
- 220
- 240

No, the answer is incorrect.
Score: 0
Accepted Answers:
200

8) *The value of the objective function of the following L. P. P.* — *1 point*

$Min.\ Z = x_1 - 3x_2 + 2x_3$

subject to

$3x_1 - x_2 + 2x_3 \leq 7$
$-2x_1 + 4x_2 \leq 12$
$-4x_1 + 3x_2 + 8x_3 \leq 10,$
$x_1,\ x_2,\ x_3 \geq 0$

using simplex method, is equal to

- -10
- 10
- -11
- -12

No, the answer is incorrect.
Score: 0
Accepted Answers:
-11

9) *The optimal solutions for the following L. P. P.* — *1 point*

$Max.\ Z = 4x_1 + 10x_2$

subject to

$2x_1 + x_2 \leq 50,$
$2x_1 + 5x_2 \leq 100,$
$2x_1 + 3x_2 \leq 90,$

and $x_1,\ x_2 \geq 0,$

is

- $x_1 = 50,\ x_2 = 0$ *and* $x_1 = 25/8,\ x_2 = 75/4,\ Max\ Z = 200$
- $x_1 = 0,\ x_2 = 20$ *and* $x_1 = 75/4,\ x_2 = 25/2,\ Max\ Z = 200$
- $x_1 = 0,\ x_2 = 20$ *and* $x_1 = 25/8, x_2 = 75/4,\ Max\ Z = 200$
- $x_1 = 50,\ x_2 = 0$ *and* $x_1 = 75/4, x_2 = 25/2,\ Max\ Z = 200$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$x_1 = 0,\ x_2 = 20$ *and* $x_1 = 75/4,\ x_2 = 25/2,\ Max\ Z = 200$

10) *The solution of the following degenerate L. P. P.* — *1 point*

$Max.\ Z = 2x_1 + 3x_2 + 10x_3$

Subject to

$x_1 + 2x_3 = 0,$
$x_2 + x_3 = 1,$
$x_1,\ x_2,\ x_3 \geq 0,$

is given by

- $x_1 = 0,\ x_2 = 1\ (non-basic);\ x_3 = 0\ (basic);\ max.\ Z = 3$
- $x_3 = 0\ (non-basic);\ x_1 = 0,\ x_2 = 1\ (basic);\ max.\ Z = 3$
- $x_2 = 1\ (non-basic);\ x_1 = 0,\ x_3 = 0\ (basic);\ max.\ Z = 3$
- $x_1 = 0\ (non-basic);\ x_2 = 1,\ x_3 = 0\ (basic);\ max.\ Z = 3$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$x_1 = 0\ (non-basic);\ x_2 = 1,\ x_3 = 0\ (basic);\ max.\ Z = 3$