X

Unit 4 - Week 3

Assignment 3

The due date for submitting this assignment has passed. **Due on 2018-09-05, 23:59 IST.**
As per our records you have not submitted this assignment.

1) Why study Integer Linear Programming? ***1 point***

- i. It is the most updated method to solve Linear Programming problems
- ii. All types of real world problems can be solved by Integer Linear Programming
- iii. When the Decision Variables in a Linear Programming become integers
- iv. When the objective function returns an integer value

No, the answer is incorrect.
Score: 0

Accepted Answers:
iii. When the Decision Variables in a Linear Programming become integers

2) In a 'Fixed Charge' problem, machines are rented for manufacturing 3 types of products – P1, P2, P3. There are rents for the machines which are like fixed charges and there are variable costs per unit of products produced. If 100 P1, 200 P2 and 0 (zero) P3 are produced, then: ***1 point***

- i. Fixed Charge is applicable for all the products - P1, P2 and P3
- ii. Fixed Charge is applicable for P1 and P2 only
- iii. Fixed Charge is applicable for P3 only
- iv. Fixed Charge is applicable for none

No, the answer is incorrect.
Score: 0

Accepted Answers:
ii. Fixed Charge is applicable for P1 and P2 only

3) Which of the following conditions is true for Mixed Integer Programming? ***1 point***

- i. All the decision variables are integers
- ii. All the decision variables are binary
- iii. Some decision variables are integers, others may assume any value
- iv. Some decision variables are integers, others are binary

Assignment Solution

- i. Travelling Salesman Problem
- ii. Product Mix Problem
- iii. Assignment Problem
- iv. Set Covering Problem

No, the answer is incorrect.
Score: 0

Accepted Answers:
ii. Product Mix Problem

5) ***1 point***

There are 4 Projects as given in the table below:

Project	Cost	Return after 2 Years
P1	2000	5000
P2	3000	6000
P3	4000	7000
P4	5000	8000

The budget is Rs. 25000. Total return after 2 years should be maximized. x_i's are the bina decision variables representing the choice of the projects (1 means the Project is chosen). project can be chosen only once. The objective function of the ILP problem will be:

- i. Max Z = 5000 x1+ 6000 x2+ 7000 x3+ 8000 x4
- ii. Min Z = 5000 x1+ 6000 x2+ 7000 x3+ 8000 x4
- iii. Max Z = 2000 x1+ 3000 x2+ 4000 x3+ 5000 x4
- iv. Min Z = 2000 x1+ 3000 x2+ 4000 x3+ 5000 x4

No, the answer is incorrect.
Score: 0

Accepted Answers:
i. Max Z = 5000 x1+ 6000 x2+ 7000 x3+ 8000 x4

6) If at least 2 projects are be selected for the problem given in Question 5, then the additional constraint to be added will be: ***1 point***

- i. x1+ x2+ x3+ x4 <= 2
- ii. x1+ x2+ x3+ x4 >= 2
- iii. x1+ x2+ x3+ x4 = 2
- iv. 2(x1+ x2+ x3+ x4) = 2

No, the answer is incorrect.
Score: 0

Accepted Answers:
ii. x1+ x2+ x3+ x4 >= 2

7) It is given in Question 5 that if Project P1 is selected then Project P3 cannot be selected and vice versa, then the additional constraint to be added will be: ***1 point***

- i. x1+ x3 = x2+ x4
- ii. x1+ x3 = 0
- iii. x1 > x3
- iv. x1+ x3 = 1

No, the answer is incorrect.

Score: 0

Accepted Answers:
iv. x1+ x3 = 1

8) It is given in Question 5 that at least 1 project must be selected out of projects P1, P2, and P3, then the additional constraint to be added will be: ***1 point***

- i. x1+x2+x3 = 1
- ii. x1+x2+x3 >= 1
- iii. x1+ x2+x3 = x4
- iv. x1 +x2+x3 > 0

No, the answer is incorrect.
Score: 0

Accepted Answers:
ii. x1+x2+x3 >= 1

9) ***1 point***

A promoter is in the business of buying and selling of vacant land, ordinary flats and furnishe flats in a city. Rs. 200 L is available with the promoter for this business. Relevant Data are follows:

Land:	Cost: Rs. 5 L/decimal;	Selling price: Rs. 6.5 L/decimal
Ordinary flat:	Cost: Rs. 10 L/Unit;	Selling price: Rs. 15 L/unit
Furnished flat:	Cost: Rs. 12 L/Unit;	Selling price: Rs. 16.5 L/unit

Maximum Available resources: Land: 3.2 decimal, Ordinary flats: 5, Furnished flats: 6

Decision variables: x1= Land in decimal; x2= No. of Ordinary flats; x3= No. of Furnished flats.

This is a problem of:

- i. Pure Integer programming
- ii. Binary Integer programming
- iii. Non Integer Programming
- iv. Mixed Integer programming

No, the answer is incorrect.
Score: 0

Accepted Answers:
iv. Mixed Integer programming

10) Consider Question 9. The objective function will be: ***1 point***

- i. Min Z = 5 x1+ 10 x2+ 12x3
- ii. Max Z = 5 x1+ 10 x2+ 12x3
- iii. Max Z =1.5 x1+ 5 x2+ 4.5x3
- iv. Max Z = 6.5 x1+ 15 x2+ 16.5x3

No, the answer is incorrect.
Score: 0

Accepted Answers:
iii. Max Z =1.5 x1+ 5 x2+ 4.5x3

11) Consider Question 9. Which of the following is a valid constraint for the problem? ***1 point***

- i. 5 x1+ 10 x2+ 12x3 <= 200
- ii. 6.5 x1+ 15 x2+ 16.5x3 <= 200

iii. 3x1+ 5 x2+ 6x3 <= 200

iv. 6.5 x1+ 15 x2+ 16.5x3 >= 200

No, the answer is incorrect.
Score: 0

Accepted Answers:
i. 5 x1+ 10 x2+ 12x3 <= 200

12) Which of the following is false in the context of solving Integer Linear Programming problems using Cutting Plane Method? ***1 point***

i. The present non-integer optimal solution is cut off by the cutting plane

ii. No feasible integer solution is cut off by the cutting plane

iii. All feasible integer solutions are preserved

iv. None of the above are true

No, the answer is incorrect.
Score: 0

Accepted Answers:
iv. None of the above are true

13) Which of the following assumptions of Linear Programming is not obeyed in Integer Linear Programming? ***1 point***

i. Linearity

ii. Additivity

iii. Continuity

iv. Finiteness

No, the answer is incorrect.
Score: 0

Accepted Answers:
iii. Continuity

14) ***1 point***

An in-between simplex table for a integer linear programming problem is as given below:

Simplex Table 2

Ci / Cj	Basis	Values	2	1	0	0
			X1	X2	X3	X4
0	X_3	31/3	0	11/3	1	−2/3
2	X_1	10/3	1	2/3	0	1/3
Cj − Zj			0	−1/3	0	−2/3

i. 2/3 x2 + 1/3 x4 < = 1/3

ii. 2/3 x2 + 1/3 x4 > = 1/3

iii. 2/3 x2 + 1/3 x4 > = 10/3

iv. 2/3 x2 + 1/3 x4 < = 10/3

No, the answer is incorrect.
Score: 0

Accepted Answers:
ii. 2/3 x2 + 1/3 x4 > = 1/3

15) Suppose we have a non-integer optimal solution for a Linear Programming problem. We round off the non-integer optimal solution to an integer solution. Now this integer solution may not be an optimal ***1 point***

solution for the corresponding Integer Linear programming problem because:

- i. The integer solution may not be feasible
- ii. The integer solution may not be binary
- iii. The integer solution needs to satisfy additional constraints
- iv. None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
i. The integer solution may not be feasible

Previous Page End