Read each question carefully and select the option that corresponds to your answer.

A quantitative analysis phase that represents the problem into a mathematical model. * 1 point

- ○ Definition of the problem
- ○ Model Solution
- ◉ Model Construction
- ○ Model Validity

A quantitative analysis phase that involves manipulating the model to derive the best (optimal) solution to the problem. * 1 point

- ◉ Definition of the problem
- ○ Model Solution
- ○ Model Construction
- ○ Model Validity

Linear Programming is defined as _____ * 1 point

- ○ Constrained optimization technique
- ◉ Mathematical technique
- ○ The technique for economic allocation of limited resources
- ○ All of the above

These provide choices available to the decision-maker in terms of amounts of either inputs or outputs. 1 point

- ○ constraints
- ○ objective functions
- ○ inequality
- ◉ decision variables

Clear selection

Non- negativity constraints means_____ * 1 point

- Decision variables must be equal to zero
- Decision variables must be greater than zero
- Decision variables must be greater than or equal to zero
- Decision variables must be less than zero

The objective of the transportation model is to _____ the total cost of transportation. * 1 point

- compute
- minimize
- maximize
- earn

These are indicated by the number of rows in the transportation table. * 1 point

- cost
- demand
- sources
- destinations

These are indicated by the number of columns in the transportation table. * 1 point

- cost
- supply
- sources
- destinations

These are indicated by the number of columns in the transportation table. * 1 point

- cost
- supply
- sources
- destinations

In the Northwest Corner Rule method, the allocation of the resources begins _____. * 1 point

- at the cell with a minimum cost
- with the highest opportunity cost
- from the extreme left corner or cell
- at any cell

In the Minimum cost method, the allocation of the resources begins _____. * 1 point

- at the cell with a minimum cost
- with the highest opportunity cost
- from the extreme left corner or cell
- at any cell

In the Vogel's Approximation method , the allocation of resources begins _____. * 1 point

- at the cell with a minimum cost
- with the highest opportunity cost
- from the extreme left corner or cell
- at any cell

The transportation problem is said to be balanced when the _____. * 1 point

- [x] supply and demand are equal
- [ ] no. of sources is equal to the no. of destinations
- [ ] shipping costs are equal
- [ ] no.of rows are equal to the no. of columns

This method makes use of an unused cell as a point of destination in transferring units of truckload to evaluate if the current solution can still be developed. * 1 point

- [ ] Simplex method
- [x] Stepping stone method
- [ ] Northwest Corner method
- [ ] Graphical method

In obtaining an optimal solution for a transportation problem, a negative improvement index indicates that _____. * 1 point

- [ ] the table is optimum
- [ ] the allocation is incorrect
- [x] the initial solution can still be reduced.
- [ ] the initial solution is final

Back Next Clear form

Find the mathematical model of each of the following conditions

Department 1 has a capacity of 48 hours and Department 2 has a capacity of 46 hours. Product X takes 8 hours in Department 1 and 10 hours in Department 2. Product Y takes 12 hours in Department 1 and 12 hours in Department. Department 1 has a capacity of 48 hours and Department 2 has a capacity of 46 hours. * 2 points

- (●) $8x + 12y \leq 46 ; 10x + 12y \leq 48$
- ( ) $8x + 12y \leq 48 ; 10x + 12y \leq 46$
- ( ) $8x + 10y \leq 48 ; 12x + 12y \leq 46$
- ( ) $8x + 12y = 48 ; 10x + 12y = 46$

The company should produce at least 50 units of Product x but not more than 100 units of Product Y * 2 points

- ( ) $x \leq 50 ; y \leq 100$
- ( ) $x \leq 50 ; y \geq 100$
- ( ) $x \geq 50 ; y \geq 100$
- (●) $x \geq 50 ; y \leq 100$

Company ABC aims to maximize the profit from the 3 products they manufacture. Product A contributes 150 pesos profit while Product B and C contributes 100 and 120 pesos respectively. * 2 points

- ( ) Maximize P =150 A + 120B + 120C
- (●) Maximize P =150 A + 100B + 120C
- ( ) Maximize P =100 A + 100B + 120C
- ( ) Maximize P =150 A + 100B + 100C

Minimize the cost of Product A at 100 pesos and Product B at 120 pesos * 2 points

- (●) Minimize C = 100A + 120B
- ( ) Minimize C = 100A - 120B
- ( ) Minimize C = 120A + 100B
- ( ) Minimize C = 120A -120B

A mining company produces 100 tons of red ore and 80 tons of black ore each week. These can be treated in different ways to produce three different alloys, Soft, Hard or Strong. To produce 1 ton of Soft alloy requires 5 tons of red ore and 3 tons of black. For the Hard alloy the requirements are 3 tons of red and 5 tons of black, whilst for the Strong alloy they are 5tons of red and 5 tons of black. The profit per ton from selling the alloys are $250, $300 and $400 for Soft, Hard and Strong respectively. Formulate the objective function. * 2 points

- ( ) Maximize P = 100 x + 80 y
- ( ) Maximize P = 250 x+ 300y + 400z
- ( ) Maximize P = 5 x + 3 y
- ( ) Maximize P = 5 x + 3 y + 5 z

INITIAL FEASIBLE SOLUTION

Answer the following questions based on the given problem.

A company has four operating plants and four distributing warehouses. The capacities of plants A, B, C, D are 180,170,190, and 210 respectively. Warehouses D, E, F, G requirements are 180,160,200, and 210 respectively. Find the initial feasible solution using the Northwest Corner Rule method with the shipping costs given as follows:

To / From	D	E	F	G
A	13	17	19	11
B	15	20	23	16
C	18	14	21	20
D	15	19	21	13

How many cells are with allocation? *

- ○ 4
- ○ 7
- ◉ 5
- ○ 6
- ○ 0

How many units were allocated in cell (1,1)? *

- ○ 10
- ○ 160
- ○ 190
- ◉ 180
- ○ 210
- ○ 0

How many units were allocated in cell (2,3)? *

- ○ 10
- ○ 180
- ○ 160
- ○ 210
- ◉ 0
- ○ 190

How many units were allocated in cell (3,3)? *

- ◉ 190
- ○ 0
- ○ 160
- ○ 210
- ○ 10
- ○ 180

How much is the total transportation cost? *

- ○ 12,375
- ◉ 12,490
- ○ 12,800
- ○ 12,540

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Solve the given LP problem .

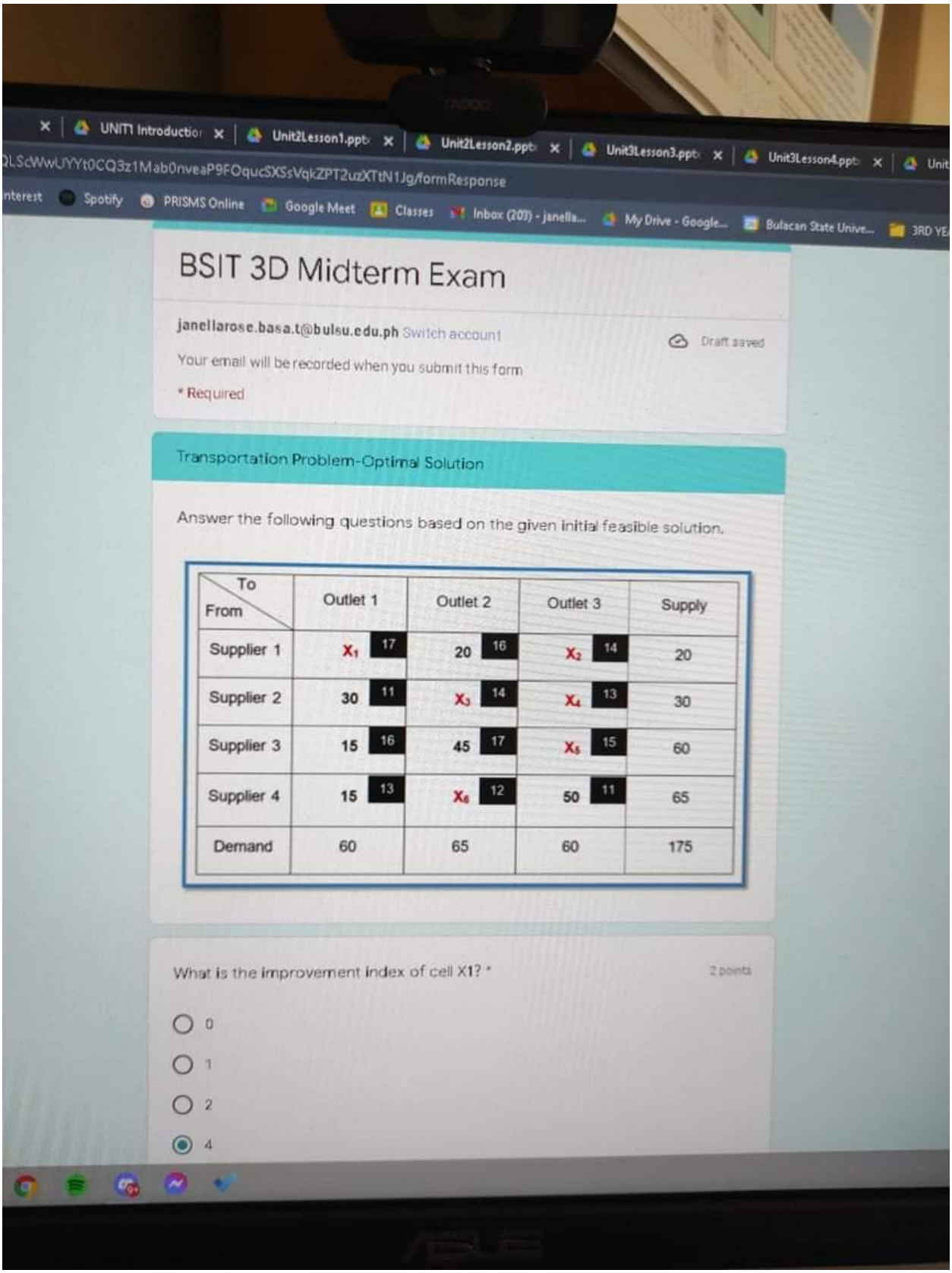
LP Problem

A company makes two types of furniture: tables and chairs. Each table contributes 50 pesos to profits and each chair, 35 pesos. Each product passes through two manufacturing departments, cutting and finishing. Each table take 1 hour a unit in cutting and 2 hours in finishing. Chair requires 1 hour a unit in cutting and 1 hour in finishing. There are currently 6 hours available in cutting and 8 hours in finishing.

What is the maximum profit? 5 points

- ○ 230
- ◉ 280
- ○ 300
- ○ 240

Clear selection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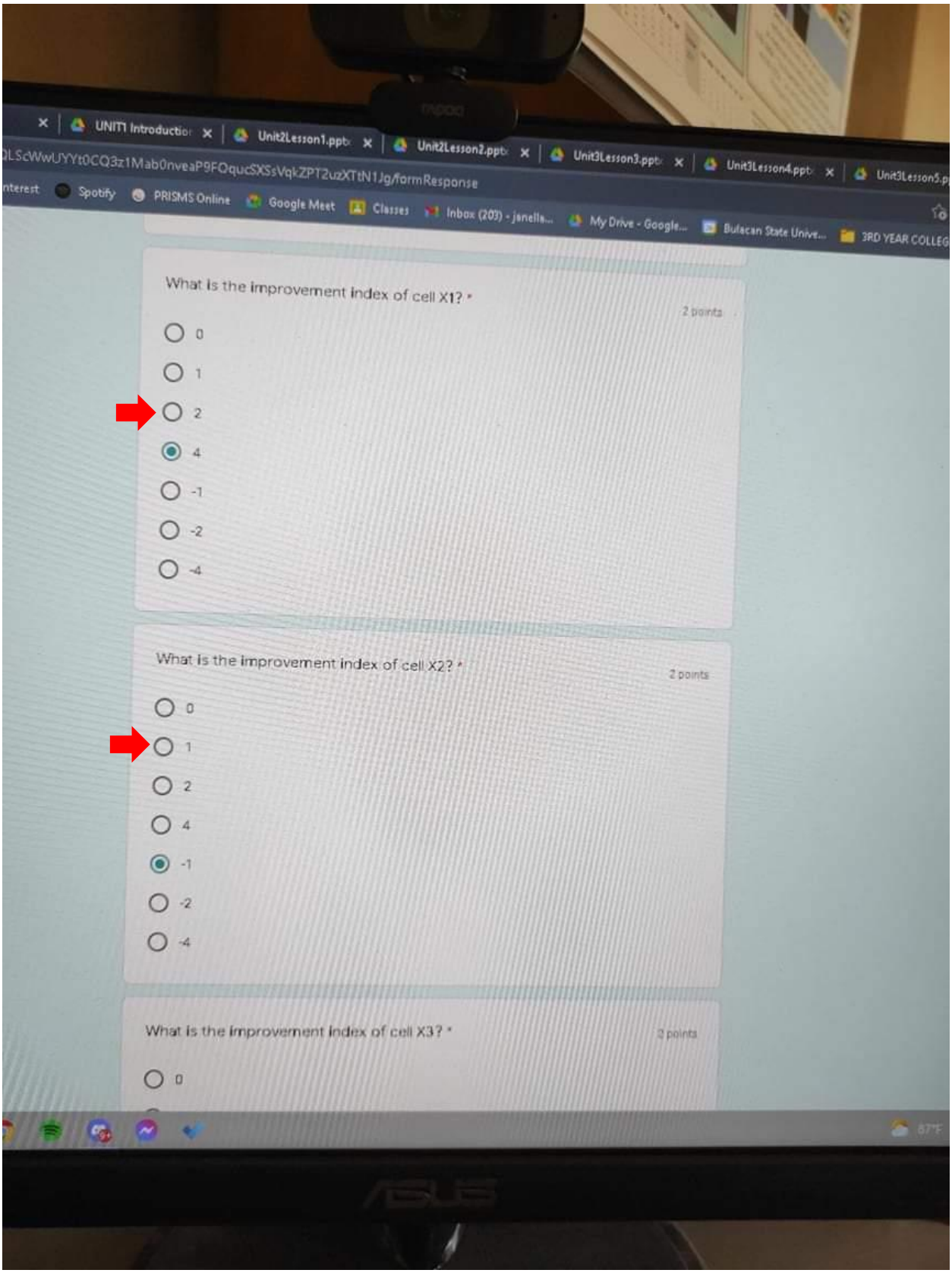
Transportation Problem-Optimal Solution
Answer the following questions based on the given initial feasible solution.
To / From
Outlet 1
Outlet 2
Outlet 3
Supply
Supplier 1
X1 17
20 16
X2 14
20
Supplier 2
30 11
X3 14
X4 13
30
Supplier 3
15 16
45 17
X5 15
60
Supplier 4
15 13
X6 12
50 11
65
Demand
60
65
60
175
What is the improvement index of cell X1? *
2 points
0
1
2
4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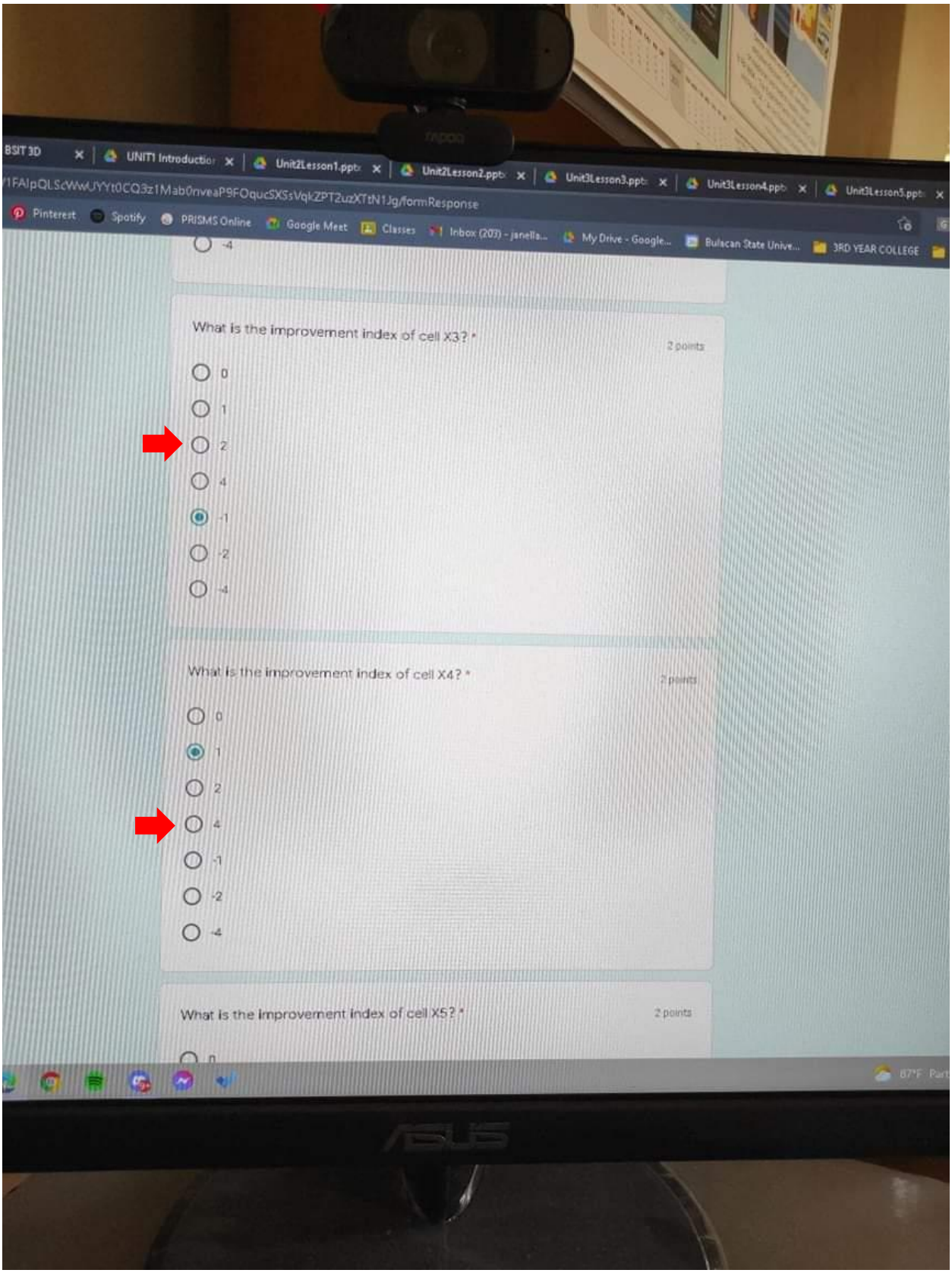
What is the improvement index of cell X1? *
2 points
0
1
2
4
-1
-2
-4
What is the improvement index of cell X2? *
2 points
0
1
2
4
-1
-2
-4
What is the improvement index of cell X3? *
2 points
0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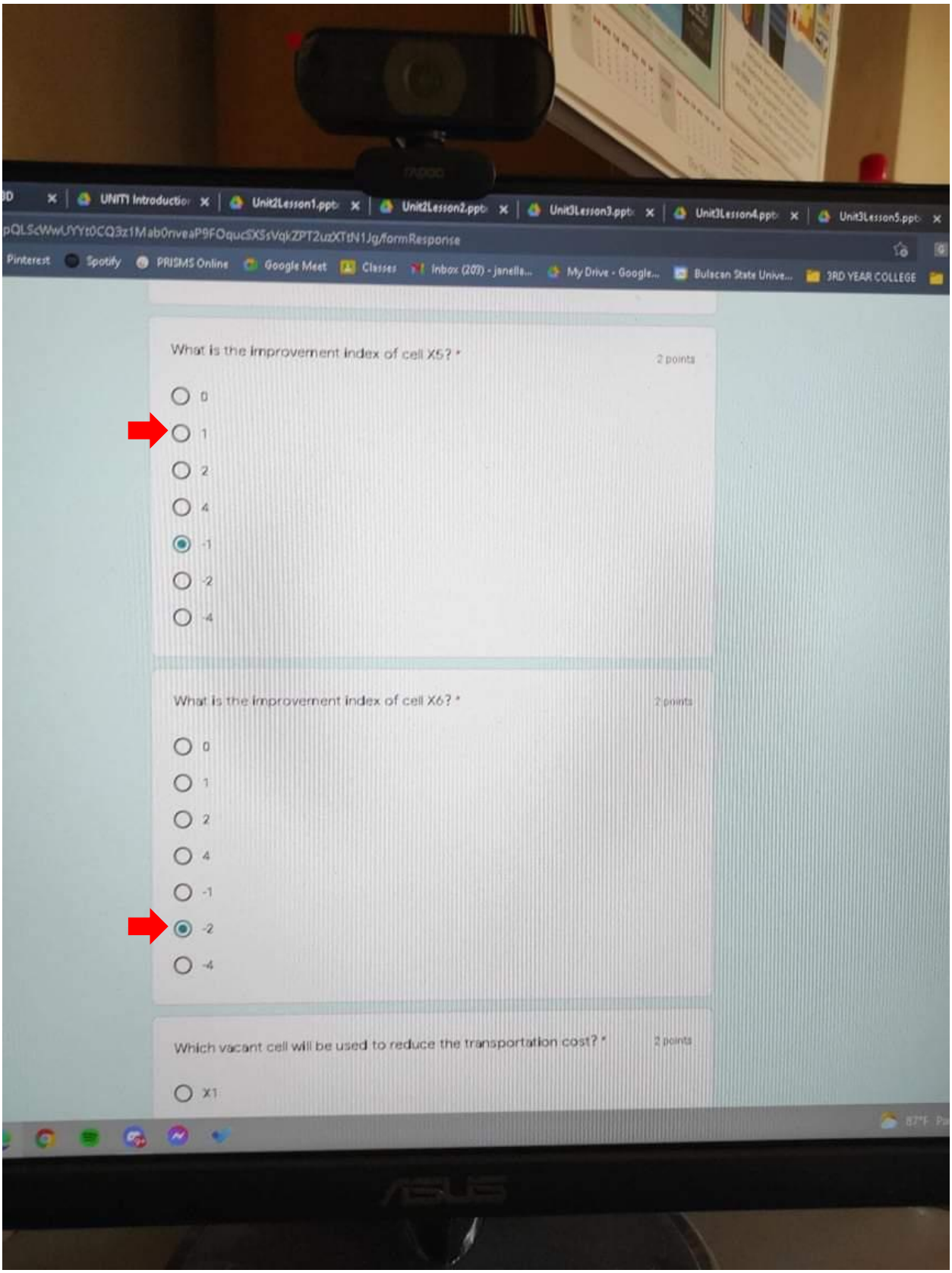
-4
What is the improvement index of cell X3? *
2 points
0
1
2
4
-1
-2
-4
What is the improvement index of cell X4? *
2 points
0
1
2
4
-1
-2
-4
What is the improvement index of cell X5? *
2 points
0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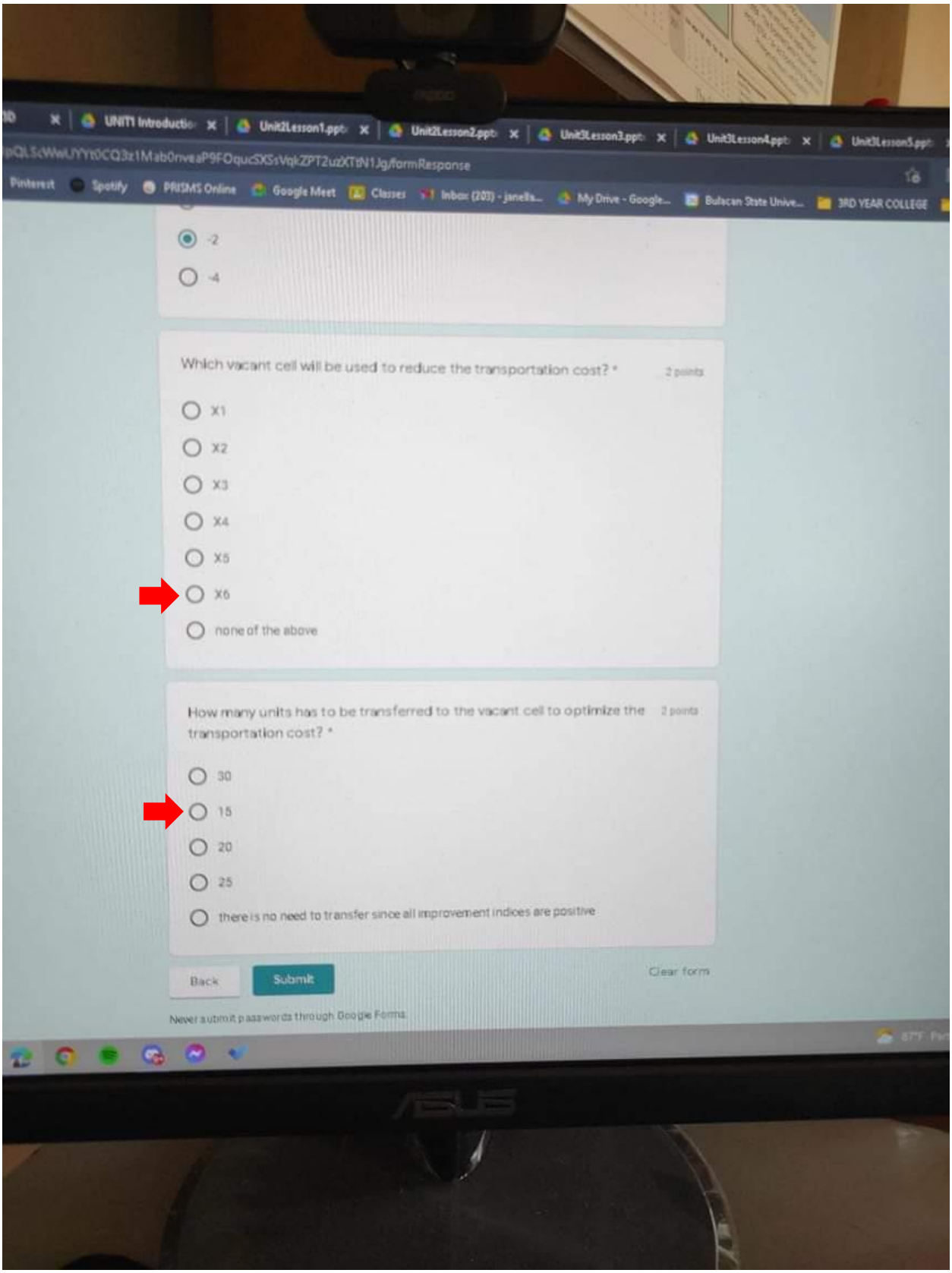
What is the improvement index of cell X5? *
2 points
0
1
2
4
-1
-2
-4
What is the improvement index of cell X6? *
2 points
0
1
2
4
-1
-2
-4
Which vacant cell will be used to reduce the transportation cost? *
2 points
X1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-2
-4
Which vacant cell will be used to reduce the transportation cost? *
2 points
X1
X2
X3
X4
X5
X6
none of the above
How many units has to be transferred to the vacant cell to optimize the transportation cost? *
2 points
30
15
20
25
there is no need to transfer since all improvement indices are positive
Back
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