BC180203729: SHABAN RASHEED

Time Left 71 sec(s

MTH601 - Operations Research (Quiz 03)

Quiz Start Time: 10:44 AM, 21 July 20

Question # 2 of 10 (Start time: 10:45:56 AM, 21 July 2023)

Total Mark

If U_i and V_j are row and column numbers respectively, then the implied cost C_{ij} is given by:

Select the correct option

Reload Math Equations

- ○ $U_i - V_j$
- ○ U_i / V_j
- ○ $U_i \times V_j$
- ◉ $U_i + V_j$

Click to Save Answer & Move to Next Questio

Question # 1 of 10 (Start time: 10:44:51 AM, 21 July 2023) **Total Ma**

In the Vogel's approximation Method for solving a Transportation problem, Penalty measure for any row or column, is given by which of the following?

Select the correct option

○	Difference between any two arbitrary costs in the came row(column)
○	Difference between the Largest unit cost to the smallest unit cost in the came row(column)
◉	Difference between the smallest unit cost to the next smallest cost in the same row(column)
○	Difference between the largest unit cost to the next largest cost in the same row(column)

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 10:44 AM, 21 July 20**

Question # 3 of 10 (Start time: 10:46:29 AM, 21 July 2023) **Total Mark**

An unrestricted primal variable will result in an equality dual constraint. Conversely a primal equation produces an unrestricted dual variable.

Select the correct option

- (●) False
- ( ) True

Click to Save Answer & Move to Next Questio

Question # 5 of 10 (Start time: 10:48:33 AM, 21 July 2023) **Total Ma**

The North – West Corner Rule

Select the correct option

○	Is used to find optimal solution
○	Is based on the concept of minimizing opportunity cost.
○	None of above
◉	Is used to find an initial feasible solution

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 10:44 AM, 21 July 2**

Question # 4 of 10 (Start time: 10:47:29 AM, 21 July 2023) **Total Ma**

When the total allocations in a transportation model of m*n size is not equals to "m + n – 1", the situation is known as:

Select the correct option

- (●) Degeneracy
- ( ) Unbalanced situation
- ( ) Tie situation
- ( ) None of the above

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 10:44 AM, 21 July 2**

Question # 7 of 10 (Start time: 10:49:46 AM, 21 July 2023) **Total Ma**

While solving a Transportation problem by Vogel's approximation method, if the row has two elements of the same magnitude say 'x' as the smallest element then the opportunity(penalty) cost of that row or column is ----------.

Select the correct option

- ○ -x
- ◉ Zero
- ○ 2x
- ○ x

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 10:44 AM, 21 July 2**

Question # 6 of 10 (Start time: 10:49:11 AM, 21 July 2023) **Total Mar**

There always exists a Basic Feasible Solution of a Balanced Transportation Problem.

Select the correct option

- ○ False
- ◉ True

Time Left sec

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 10:44 AM, 21 July**

Question # 8 of 10 (Start time: 10:51:06 AM, 21 July 2023) **Total Mo**

If the decision variables in primal problem are nonnegative then decision variables in dual are negative.

Select the correct option

- (●) False
- ( ) True

Question # 10 of 10 (Start time: 10:53:37 AM, 21 July 2023)

Which of the following method is used to find the initial basic feasible solution of a transportation problem?

Select the correct option

○	North West Corner Method
◉	All above methods are applicable
○	Least Cost's Method
○	Vogel's approximation Method

Question # 9 of 10 (Start time: 10:52:24 AM, 21 July 2023) **Total Ma**

For calculating the penalty cost of a row in Vogel's approximation method, if the smallest element is '3' and other elements are 3, 4, 5 then which of the following will be taken as next highest?

Select the correct option

- (●) 3
- ( ) 7
- ( ) 4
- ( ) 5

MC200200778: RAMEEZ SOHAIL

Time Left 52 sec(

MTH601 - Operations Research (Quiz 03)

Quiz Start Time: 11:20 AM, 21 July 20

Question # 9 of 10 (Start time: 11:29:20 AM, 21 July 2023)

Total Mark

If in the primal problem , there are 2 variables and 3 constraints and the elements of the right hand side of the constraints are 200,567,987 respectively, then its dual objective function i
_____.

Select the correct option

Reload Math Equation

- ○ $Z = y_1 + 3y_3$
- ○ $Z = 200y_1 + 567y_2$
- ○ $Z = y_1 + y_2 + y_3$
- ◉ $Z = 200y_1 + 567y_2 + 987y_3$

Click to Save Answer & Move to Next Questio

MC200200778: RAMEEZ SOHAIL

MTH601 - Operations Research (Quiz 03)

Question # 8 of 10 (Start time: 11:28:08 AM, 21 July 2023)

Which values of "a_{ij}'s" in the standard form of a linear programming problem will transform it in standard Transportation problem?

Select the correct option

- $a_{ij} = 0$ for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$
- $a_{ij} = 0$ or 1 for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$
- $a_{ij} = 1$ for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$
- $a_{ij} = 0$ and 1 for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$

Question # 10 of 10 (Start time: 11:30:10 AM, 21 July 2023)

The number of variables in the Primal will be the number of -------- in Dual and vice versa.

Select the correct option

○	variables also
◉	constraints
○	slacks
○	artificial variables

Question # 7 of 10 (Start time: 11:27:02 AM, 21 July 2023)

Which of the following Method is comparatively little complex to solve a Transportation problem?

Select the correct option

○	Hungarian's Method
○	Vogel's approximation Method
○	North West Corner Method
○	Least Cost Method

MTH601 - Operations Research (Quiz 03)

Question # 6 of 10 (Start time: 11:26:08 AM, 21 July 2023)

The amounts shipped from a dummy source represent shortages at the receiving destinations

Select the correct option

○	True
○	False

Question # 4 of 10 (Start time: 11:23:55 AM, 21 July 2023)

In a Transportation Problem, the objective function 'Z' gives ----------.

Select the correct option

○	Total Profit of transportation
○	Total Time of transportation
○	Total inventory be supplied in transportation
◉	Total Cost of transportation

MC200200778: RAMEEZ SOHAIL

MTH601 - Operations Research (Quiz 03)

Question # 5 of 10 (Start time: 11:24:48 AM, 21 July 2023)

If x_1 unrestricted variabl and $x_2 = 0$, then standard primal form of objective function of Z. Where Max $Z = 7x_1 + 89x$

Select the correct option

○	Max $Z = 7(x_1^- + x_1^-) + 89x_2$
○	Max $Z = 7(x_1^+ + x_1^-) + 89x_2$
○	Max $Z = 7(x_1^+ + x_1^+) + 89x_2$
○	Max $Z = 7(x_1^+ - x_1^-) + 89x_2$

Question # 3 of 10 (Start time: 11:23:29 AM, 21 July 2023) **Tot**

Which of the following will be the penalty cost of a row in Vogel's approximation method, if the smallest element is '3' and other elements are 3, 4, 5 ?

Select the correct option

- ○ 2
- ○ 0
- ○ 1
- ◉ 3

Click to Save Answer & Move to Next

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 11:20**

Question # 1 of 10 (Start time: 11:20:40 AM, 21 July 2023)

Graphically, in case of optimal degenerate solution,feasible solution always exists at corner points ----------.

Select the correct option

- (●) lie on any axis
- ( ) except at both axes

Question # 2 of 10 (Start time: 11:22:20 AM, 21 July 2023)

Under which of the following condition in the Least Cost Method, after first allocation in cell (1,1), next allocation along the diagonal in cell (2,2) can be made?

Select the correct option

○	Total Supply = Total Demand
○	If Total Supply is not equal to Total Demand
○	If in the second row and second column, each resource and sink contain equal units
○	If after crossed out 1st row or 1st column, cell (2,2) is of minimum cost

Question # 1 of 10 (Start time: 03:17:02 PM, 22 July 2023) **Total Mar**

If a Transportation problem has 'm+n' constraints then how many number of unknowns it will have?

Select the correct option

- (●) m.n
- ( ) m+n
- ( ) m/n
- ( ) m−n

MTH601 - Operations Research (Quiz 03)

Question # 3 of 10 (Start time: 03:19:21 PM, 22 July 2023)

The dual of a dual problem yields the original primal.

Select the correct option

○	False
◉	True

Question # 2 of 10 (Start time: 03:18:14 PM, 22 July 2023)

Due to which of the following reason, Simplex method is not preferred to solve a Transportation problem?

Select the correct option

◉	Since Transportation problem contains constraints of '=' type
○	Since it contains large number of decision variables 'xij's' so that it becomes complicated
○	Since Transportation problem does not contain negative slacks
○	Since Transportation problem does not contain positive slacks

Question # 4 of 10 (Start time: 03:20:21 PM, 22 July 2023) **Total Mar**

If a balanced Transportation problem with '7' sources and '6'sinks then its non-degenerate basic feasible solution will have---------- independent allocations.

Select the correct option

○	13
○	11
○	10
◉	12

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 03:17 PM, 22 July**

Question # 5 of 10 (Start time: 03:21:16 PM, 22 July 2023) **Total Ma**

The amounts shipped from a dummy source represent shortages at the receiving destinations

Select the correct option

- ○ False
- ◉ True

Click to Save Answer & Move to Next Questi

Question # 7 of 10 (Start time: 03:23:19 PM, 22 July 2023) **Total**

If Dual has a finite optimal solution, then the primal will------.

Select the correct option

- ○ not have a solution
- ◉ have also finite optimal solution
- ○ have only basic feasible solution
- ○ none of the above

Question # 6 of 10 (Start time: 03:22:17 PM, 22 July 2023) **Tot**

For an unbalanced Transportation problem, if the total demand is LESS than total supply then which of the following is true in order to balance the problem?

Select the correct option

- (●) A dummy sink would have to include with demand equal to the surplus
- ( ) A dummy source would have to include with supply equal to shortage
- ( ) One constraint will have to add
- ( ) One constraint will have evacuate

Click to Save Answer & Move to Next

Question # 8 of 10 (Start time: 03:23:55 PM, 22 July 2023) **Total M**

In which of the following method to solve a Transportation problem, we have to calculate one more row and one more column?

Select the correct option

- ○ North West Corner method
- ◉ Vogel's approximation Method
- ○ Least Cost Method
- ○ Simplex Method

Question # 9 of 10 (Start time: 03:24:24 PM, 22 July 2023) **Total Mo**

While solving a Transportation problem by Vogel's approximation method, if the row has two elements of the same magnitude say 'x' as the smallest element then the opportunity(penalty) cost of that row or column is ----------.

Select the correct option

○	x
◉	Zero
○	2x
○	−x

MTH601 - Operations Research (Quiz 03) **Quiz Start Time: 03:17 PM, 22 July**

Question # 10 of 10 (Start time: 03:25:26 PM, 22 July 2023) **Total M**

Which of the following Method is comparatively little complex to solve a Transportation problem?

Select the correct option

- ○ Vogel's approximation Method
- ○ Least Cost Method
- ○ Hungarian's Method
- ◉ North West Corner Method

Answer and Explanation:

It is under linear programming in which if the primal has an unbounded solution or it is unbounded then dual unbounded would be impossible but if dual has an unbounded solution, then primal has the **infeasible solution.**

https://homework.study.com › if-th...

If the primal has an unbounded solution, then the dual has

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If the primal problem has an unbounded solution. Then the dual has

If the primal problem has an unbounded solution. Then the dual has · 1)All constraints are = type · 2)RHS of each constraint is non -ve · 3)all variable are non ...

6.2 Optimality test

For conducting the optimality test to any feasible sol
o conditions must be satisfied.

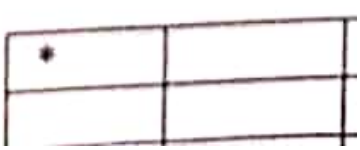
1. It consists of **exactly** $(m + n - 1)$ individual cells bein
2. These allocations are in independent positions.

e first condition is normally satisfied in many problems. I
te known as degeneracy, in the transportation mode. The di
a later section.

A set of allocations comprising a feasible solution is
ncrease or decrease any individual allocation without eithe
or column restrictions. In other words, a simple criterion t
allocation back to itself, by a series of alternating hori
ther, without a direct reversal of route.

For example, if the occupied cells form a closed loop

ple 20



The total cost of transportation by this method will be

$$65 \times 5 + 5 \times 7 + 30 \times 4 + 7 \times 7 + 43 \times 7 = \text{Rs. } 830.$$

As the solution obtained by the North West Corner Rule may not
ıal solution, we have to explore a promising initial basic feasible s
ion to the problem with minimum number of iterations.

2 Least Cost Method

P 1: Determine the least cost among all the rows of the transportation

P 2:Identify the row and allocate the maximum feasible quantity in
ɔw. Then eliminate that row (column) when an allocation is made.

P 3: Repeat steps 1 and 2 for the reduced transportation table until a
:quired places. If the minimum cost is not unique, the tie can be brok

To illustrate, consider the example repeated in table 7

: 7

nation

Origin	P	Q	R	S
A	5	7	8	7
B	4	4	6	3
C	6	7	7	5
Demand	65 35	42	43	

xamine the rows A, B and C, 4 is the least cost element in the cell
arily. Select (B, P). The origin B can supply 30 items to P and th

The transportation problem is one of the sub class of **linear programming problem**. Transportation problem deals with the transportation of commodity from the different sources to different destinations.

5 Transportation Models

5.1 Introduction

Many practical problems in operations research can be broadly formul
problems, for which the simplex this is a general method and cannot be used for specif

(i) transportation models,
(ii) transshipment models and
(iii) the assignment models.

The above models are also basically allocation models. We can adopt the sim
but easier algorithms have been developed for solution of such problems. The fol
transportation problems and their streamlined procedures for solution.

In a transportation problem, we have certain origins, which may represen
items and supply a required quantity of the products to a certain number of destination
way as to maximize the profit or minimize the cost. Thus we have the places of produ

MC200204552: ZEESHAN ALI HAIDER

Time Left 89 sec(s)

MTH601:Quiz

Quiz Start Time: 11:43 AM, 23 August 2021

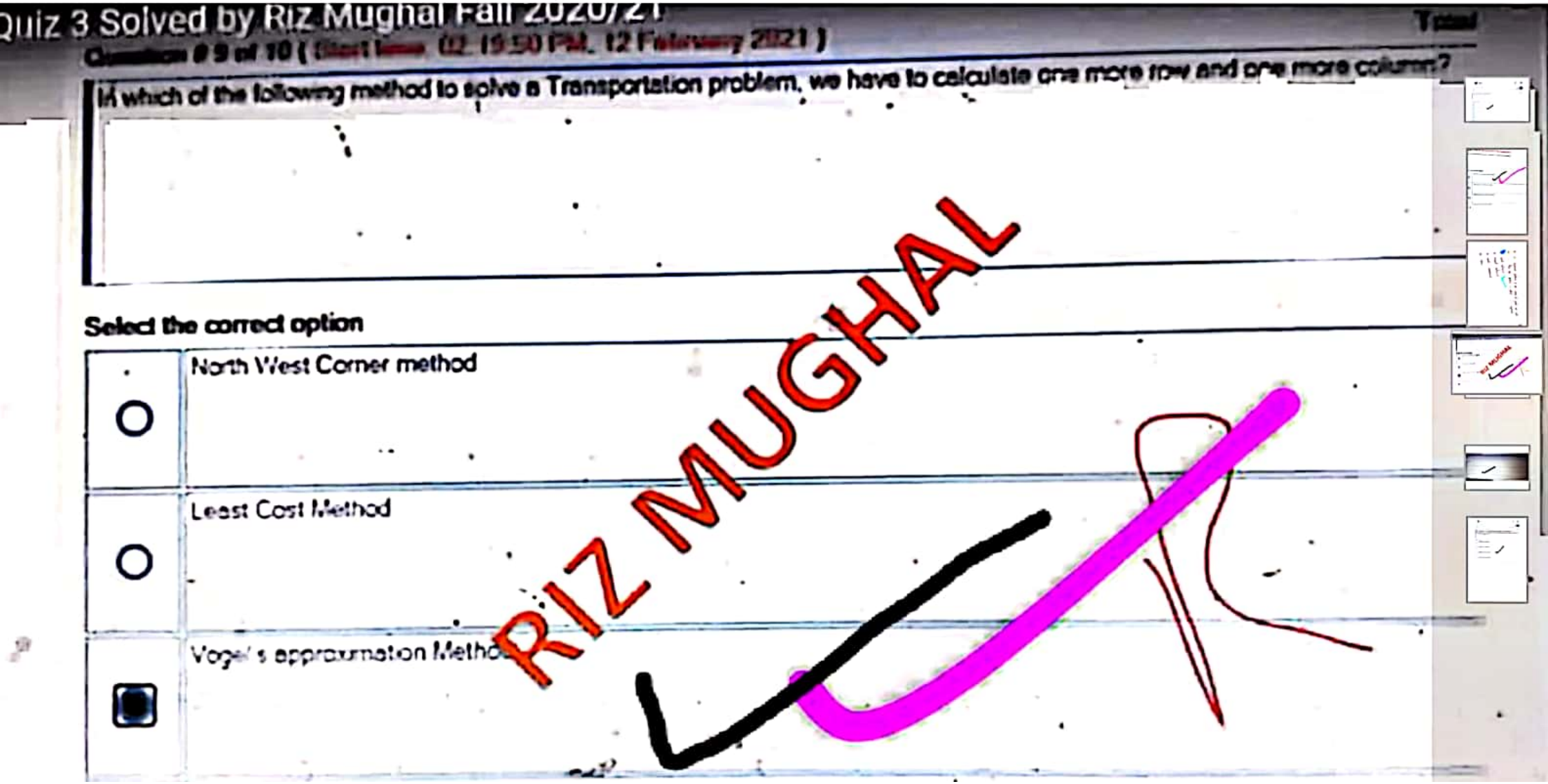
Question # 3 of 10 (Start time: 11:45:01 AM, 23 August 2021)

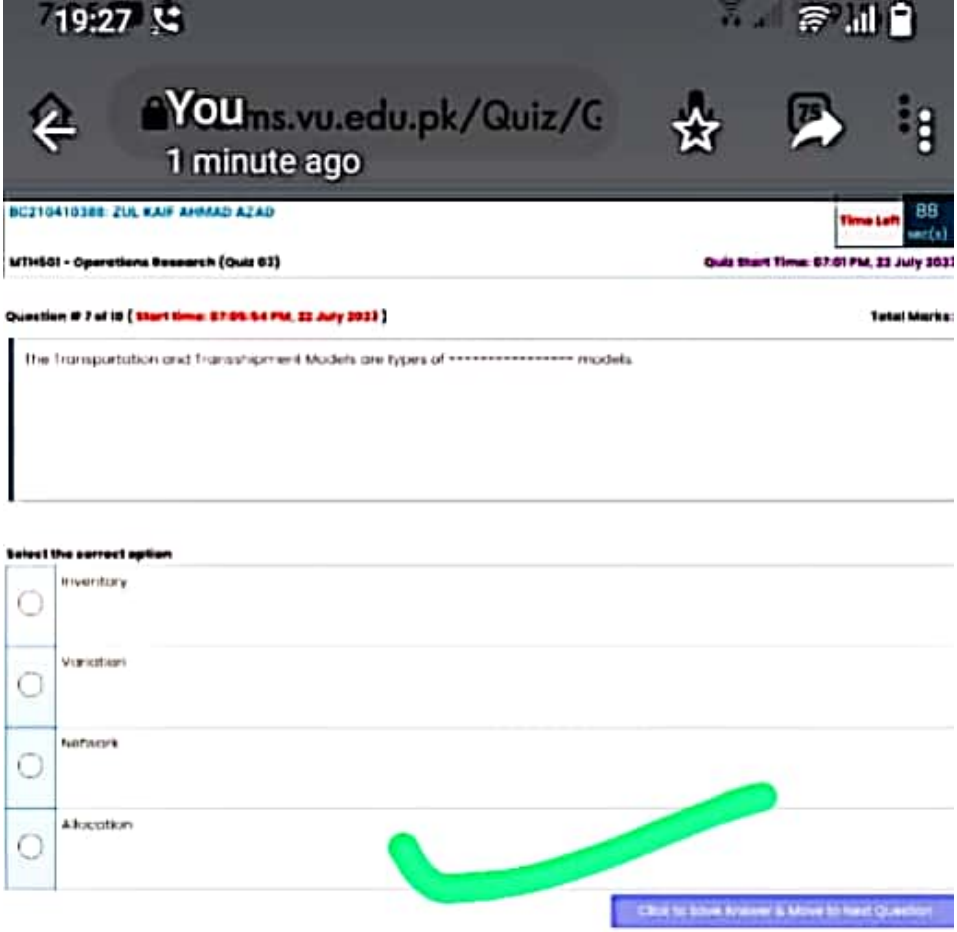
Total Marks:

There always exists a non-degenerate Feasible solution of a Balanced Transportation Problem.

Select the correct option

- o True
- o False





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BC210410388 ZUL KAIF AHMAD AZAD

Time Left 88 sec(s)

MTH601 - Operations Research (Quiz 03)

Quiz Start Time: 07:01 PM, 22 July 202

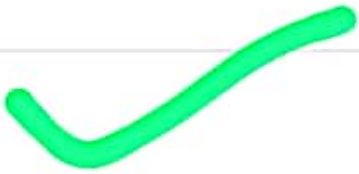
Question # 9 of 10 (Start time: 07:08:00 PM, 22 July 2023)

Total Marks

The dual of a dual problem yields the original primal

Select the correct option

True



False

Click to Save Answer & Move to Next Question

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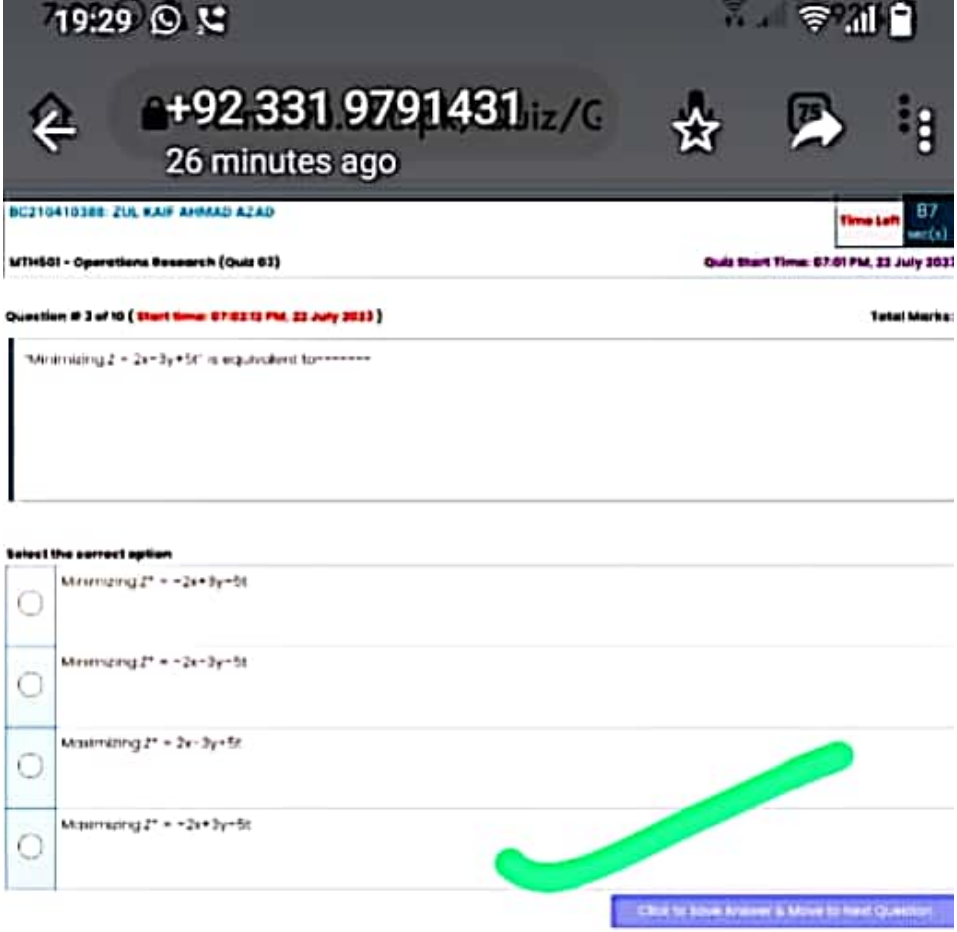


MTH601 - Operations Research (Quiz 03)

Quiz Start Time: 07:05 PM, 22 Ju

Question # 7 of 10 (Start time: 07:11:00 PM, 22 July 2023)

Total

If x_1 unrestricted variable and $x_2 = 0$, then standard primal form of objective function of Z. Where Max $Z = 7x_1 + 89x_2$

Select the correct option

Reload Math Equa

- Max $Z = 7(x_1^+ + x_1^-) - 89x_2$
- Max $Z = 7(x_1^+ + x_1^+) + 89x_2$
- Max $Z = 7(x_1^+ - x_1^-) + 89x_2$
- Max $Z = 7(x_1^- + x_1^-) - 89x_2$

Click to Save Answer & Move to Next Ques

BC210410388 ZUL KAIF AHMAD AZAD

Time Left 86 sec(s)

MTH601 - Operations Research (Quiz 03)

Quiz Start Time: 07:01 PM, 22 July 202

Question # 3 of 10 (Start time: 07:01:42 PM, 22 July 2023)

Total Marks

Which values of 'a_{ij}' in the standard form of a linear programming problem will transform it in standard transportation problem?

Select the correct option

Reload Math Equations

- $a_{ij} = 0$ or 1 for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$
- $a_{ij} = 0$ for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$
- $a_{ij} = 1$ for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$
- $a_{ij} = 0$ and 1 for all $i = 1, 2, \cdots, m; j = 1, 2, \cdots, n$

Click to Save Answer & Move to Next Question

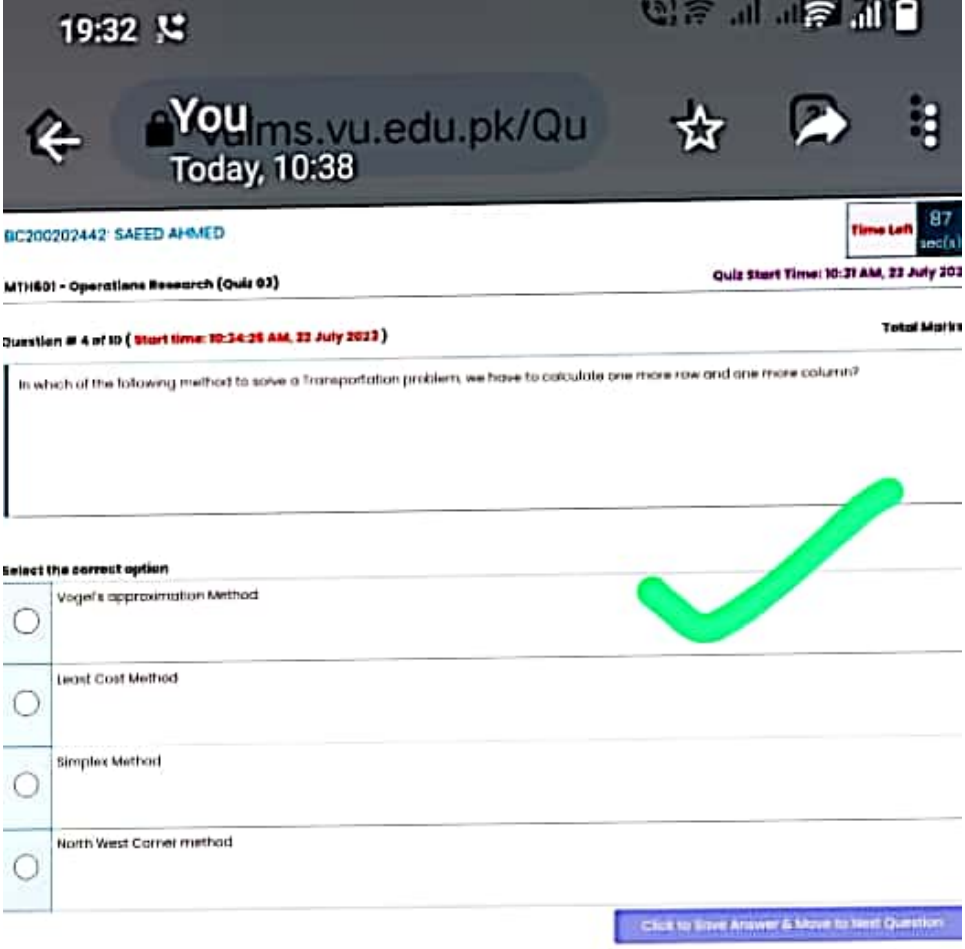
Question # 8 of 10 (Start time: 09:38:34 PM, 31 July 2023) **Total Marks**

For North West Corner method, in the first row and first column, each resource and sink contain '5' units; then after allocating the appropriate amount 'x11' in the cell (1,1), in which of the following cell the next allocation will be zero?

Select the correct option

- In cell (1,2) only
- In cell (2,1) only
- Arbitrarily chosen either in (1,2) or in (2,1)
- Neither in (1,2) nor in (2,1) but in along the diagonal in (2,2)

Click to Save Answer & Move to Next Question



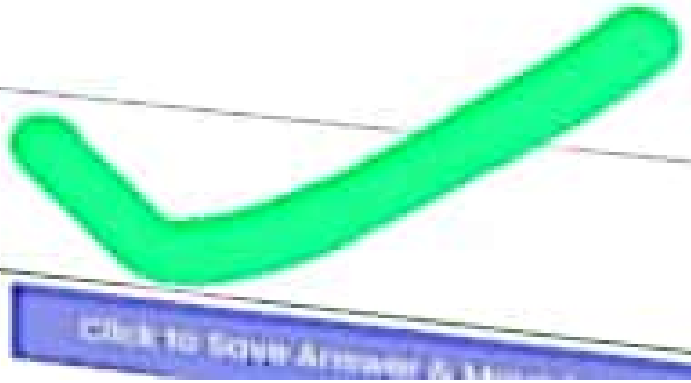
Question # 10 of 10 (Start time: 09:31:28 PM, 21 July 2022)

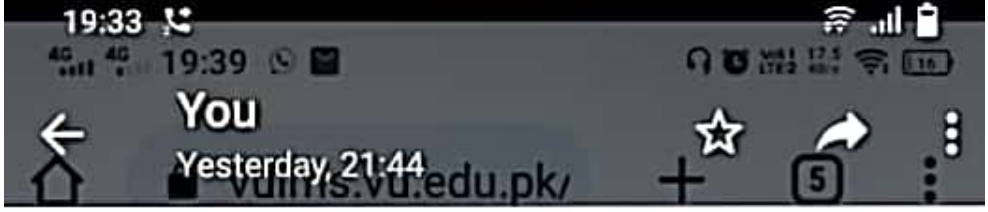
Total Marks

Which of the following reason to prefer Vogel's approximation method over other two methods?

Select the correct option

- Vogel's method gives the shortest transportation rout
- Vogel's method gives optimal time plan of transportation
- Vogel's method allocate minimum amount to the variable with least unit cost
- Vogel's method gives the feasible solution near to the optimal





MC210204822: MUHAMMAD WAQAS BASHIR

Time Left 90

MTH601 - Operations Research (Quiz 03)

Quiz Start Time: 07:29 PM, 21 July 202

Question # 9 of 10 (Start time: 07:39:16 PM, 21 July 2023)

Total Marks:

While solving an LP problem, if the candidate for a leaving variable becomes zero, then solution is said to be ———

Select the correct option

- non-degenerate solution
- optimal solution
- infeasible solution
- degenerate solution

Click to Save Answer & Move to Next Question