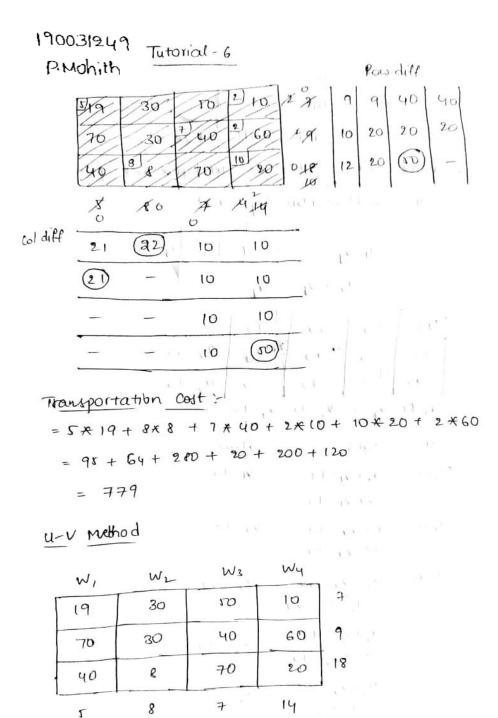
MP-1 TUTORIAL-6

1. Demonstrate the Initial Basic Solution in Transportation problem using Vogel method in Linear Programming (U-V method)., Least time Transportation problem.

QUESTION:

| Factory/Warehouse | W_1 | W_2 | W_3 | W_4 | Factory Capacity |
|-----------------------|-------|-------|-------|-------|------------------|
| F_1 | 19 | 30 | 50 | 10 | 7 |
| F_2 | 70 | 30 | 40 | 60 | 9 |
| F_3 | 40 | 8 | 70 | 20 | 18 |
| Warehouse Requirement | 5 | 8 | 7 | 14 | |



M= no of oligins = 3.

n= no of destinations = 4

m+n-1=6 =) no of allocation = 6

And the allocations are independent positions is

The problem non-degenerate

1+cp: 2

1111111

| 1 | 5)19 | 30 | 50 | 2 10 | 4/=0 |
|---|------|----|-------|------|-------|
| | 70 | 30 | 7) 40 | 60 | u2=50 |
| | 40 | 8 | 70 | 20 | u3=10 |

$$V_1 = 19$$
 $V_2 = -2$ $V_3 = -10$ $V_4 = 10$

$$(24)$$
 $42 + 4 = 60$ $42 = 50$ $42 + 10 = 60$

$$(7,3)$$
 $u_1+v_3=40$ $v_3=-10$

$$(3,4)$$
 $u_3 + v_4 = 20$ $u_3 = 10$

| 19 | (31) 30 | (60) SO | 2 10 |
|-------------------|---------|---------|------|
| ^(') 70 | (10) | 1 40 | 1 60 |
| ⁽¹⁾ 40 | 8 | (70) | 10) |

50

0

u;

10

Cell (911)
$$30 - (41+V_2)$$
 32 $30 - (41+V_2)$ 32 $30 - (0-2)$ 60 $(7,1)$ $70 - (41+V_2)$ 1 -19 $(7,2)$ $30 - (41+V_2)$ 11 $(3,1)$ $40 - (43+V_1)$ 11 $(3,3)$ $70 - (43+V_3)$ 70

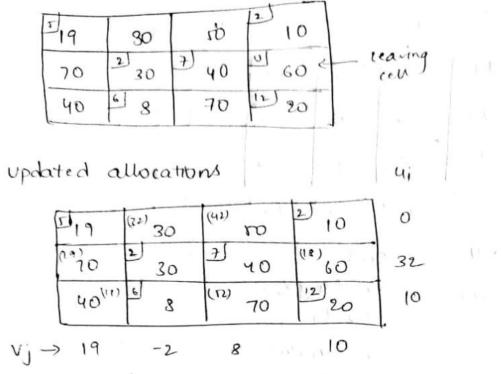
If all the cells evaluations are non-negative then the solution is optimal The cell coaluation -18 is negative so sol is not optimal

.. Intering cell (2,2)

| | | | (2) |
|----|-----|------|------|
| 19 | 30 | 20 | 10 |
| 70 | 30 | 7 40 | > 60 |
| 40 | 8 8 | 70 | 1010 |

form a loop starting from cell (2,2) 0 = min { 2-0, 8-0} 2-0 - 0 0 = 2

(3,3)



Now all the cell evaluations are non-negative Transportation cost