Section-4

Ans-2

	A	B	C	A.V.
1	50	30	220	1
II	90	45	170	3
III	250	200	50	4

	A	B	C	A.V.
I	50 [1]	30	220	1
II	90 [3]	45	170	3
III	250 [6]	200 [2]	50 [2]	4
	4	2	2	

The Basic feasible solution is = $50 \times 1 + 90 \times 3 + 6 \times 250 + 2 \times 200 + 2 \times 50$

Now to test optimity by modi method the no. of base cells

$= m+n-1 = 3+3-1 = 5.$

$5 \neq$ no. of base cell

this problem is called problem of degeneracy.

we have allocated a small quantity

u_i & v_j is obtained

$v_3 = 50$

$u_3 + v_1 = 250$

$0 + v_1 = 250$

$\boxed{v_1 = 250}$

[1] 50	30	220	-200
[3] 90	+5	170	-160
250	200	[2] [2] 250	0
250	200	50	

$u_2 + v_3 = 200$

$0 + v_3 = 200$

$\boxed{v_3 = 200}$

$u_1 + v_1 = 50$

$u_1 + 250 = 50$

$\boxed{u_1 = -200}$

$u_2 + v_1 = 90$

$\boxed{u_2 = -160}$

The net evolution for each of the unoccupied cells are now determined

$$d_{ij} = u_i + v_j - c_{ij}$$

$$d_{12} = u_1 + v_2 - c_{12}$$

$$d_{12} = -30$$

1 50	-ve 30	-ve 220
3 90	-ve 45	-ve 170
	2 200	2 200

$$d_{13} = u_1 + v_3 - c_{13}$$

$$d_{13} = -370$$

$$d_{22} = u_2 + v_2 - c_{22}$$

$$d_{22} = -5$$

$$d_{23} = u_2 + v_3 - c_{23}$$

$$d_{23} = -280$$

They are obtained by $d_{ij} = u_i + v_j - c_{ij}$ if we use $d_{ij} = c_{ij} - (u_i + v_j)$ then all the net evolution should be positive

Since all the net evolution is -ve the optimum allocation is given by

$x_{11} = 1$, $x_{21} = 3$, $x_{31} = \epsilon$, $x_{32} = 2$, $x_{33} = 2$

Transportation cost $= 1 \times 50 + 90 \times 3 + 200 \times 2 + 2 \times 50 + \epsilon \times 250$

$= 820 + 250\epsilon = 820.$ $(\epsilon \to 0)$