

Assignment No.-6

GOODLUCK

Page No. 28

Date 23/12/20

Total

Que. Find minimum assignment cost of the following assignment problem using Hungarian method.

Operator

		1	2	3	4	5	Row Min.
→	Ans:- step 1						
	1	9	11	14	11	7	7
Job	2	6	15	13	13	10	6
	3	12	13	6	8	8	6
	4	11	9	10	12	9	9
	5	7	12	14	10	14	7

Step 1] Subtracting minimum value of each row from corresponding elements in that row.

Operator → 1 2 3 4 5

Job ↓

1	2	4	7	4	0
2	0	9	7	7	4
3	6	7	0	2	2
4	2	0	1	3	0
5	0	5	7	3	7
	6				
Column min	0	0	0	2	0

Step [2] :- Column Redⁿ :-
Operator

	1	2	3	4	5
+					
1	2	4	7	2	0
2	0	9	7	5	4
Job					
3	6	7	0	0	2
4	2	0	1	1	0
5	0	5	7	1	7

Step [3] Row scanning & column scanning :-
Operator

	1	2	3	4	5
1	2	4	7	2	0
2	0	9	7	5	4
Job					
3	6	7	0	0	2
4	2	0	1	1	0
5	0	5	7	1	7

Here No. of square marked = 4
No. of rows (or columns) = 5

$$\therefore N(\text{square marked}) = 4 \neq N(\text{rows}) = 5$$

Hence optimality is not reached.

Step [4] From undeleted cells, least ~~no.~~ undeleted cell is, 1,

Adding 1, to Intersection cells & subtracting 1 from undeleted cells we get.

	Operator				
	1	2	3	4	5
Job	2	4	6	1	0
2	0	9	6	4	4
3	7	8	0	0	3
4	2	0	0	0	0
5	0	5	6	0	7

Here, $\sum (\text{square-marked } 0\text{'s}) = 5 = \text{No. of rows}$

\therefore Optimal solution is reached.

Job	operator	cost
1	5	7
2	1	6
3	3	6
4	2	9
5	4	10

38 \Rightarrow Minimum total Ass. cost