

Ans 4

When the no. of rows are equal to the no. of columns, the resultant problem is called a balanced assignment problem, and if the no. of rows are not equal to the no. of columns, it is called unbalanced assignment problem.

Unbalanced Assignment problem

Any assignment problem is said to be unbalanced if the cost matrix is not a square matrix, the no. of rows and the no. of columns are not equal. To make it balanced we add a dummy row or dummy column with all the entries as zero.

Example of unbalanced problem

Job	Machines				
	A	B	C	D	E
1	4	3	6	2	7
2	10	12	11	14	16
3	4	3	2	1	5
4	8	7	6	9	6

	A	B	C	D	E
1	4	3	6	2	7
2	10	12	11	14	16
3	4	3	2	1	5
4	8	7	6	9	6
5	0	0	0	0	0

	A	B	C	D	E
1	2	1	4	0	5
2	0	2	1	4	6
3	3	2	1	0	4
4	2	1	0	3	0
5	0	0	0	0	0

	A	B	C	D	E
1	2	1	4	0	5
2	0	2	1	4	6
3	3	2	1	0	4
4	2	1	0	3	0
5	0	0	0	0	0

~~A~~ A B C D E

1	2	1	4	0	5
2	0	2	1	4	6
3	3	2	1	0	4
4	2	1	0	3	0
5	0	0	0	0	0

A B C D E

1	1	0	3	4
2	0	2	5	6
3	2	1	0	3
4	2	1	0	4
5	0	0	1	0

Job Machine Cost

1	B	3
2	A	10
3	D	1
4	C	6
5	E	0

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