Optimization - EE5327

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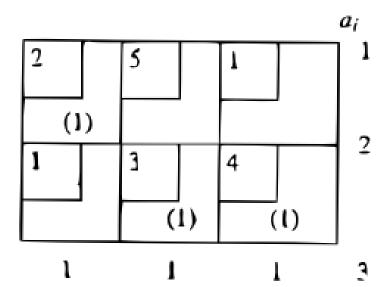
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Question

Consider the transportation problem given below. The bracketed elements in the table indicate a feasible solution and the elements on the left hand corner are the costs c_{ij} : (A) this solution is a basic feasible solution
(B) this solution can be made basic feasible
(C) this is an optimal solution
(D) the problem does not have an optimal
solution

Solution.

Answer is Option B.

Apply the northwest method on original problem as mentioned in the manual, the solution obtained is same as in picture. Since, The above allocation is obtained by applying northwest method. Thus, it is initial basic feasible solution. Now,no. of allocations $=3$, and $M+N-1=4$
Thus this solution is degenerate feasible solution.

So,we add ϵ to some unallocated cell such that allocation is independent. Now calculate the penalties using this allocation, if any penalty is positive then solution is not optimal.

After applying u-v method we can see penalty is $+$ve. And hence it is not optimal.