Answer to Question #72475, Math / Discrete Mathematics

Solve by least cost method and apply UV method to optimize the solution.

					$Supply$
	19	30	50	13	7
	70	30	40	60	10
	40	10	60	20	18
$Demand$	5	8	7	15	

Solution.

					$Supply$
				7	7
	3		7		10
	2	8		8	18
$Demand$	5	8	7	15	

$$Total\ Cost = 7 \cdot 13 + 3 \cdot 70 + 7 \cdot 40 + 2 \cdot 40 + 8 \cdot 10 + 8 \cdot 20 = 901$$

UV method:

$$c_{ij} = u_i + v_j\ for\ occupied\ cells$$

The reduced costs for unoccupied cells:

$$reduced\ cost = c_{ij} - u_i - v_j$$

$$c_{11} = 19 - 1 = 18;\ c_{12} = 30 - 7 = 23;\ c_{13} = 50 - 5 = 45$$

$$c_{22} = 30 - 2 - 7 = 21;\ c_{24} = 60 - 2 - 7 = 51;\ c_{33} = 60 - 1 - 5 = 54$$

	$v_1 = 1$	$v_2 = 7$	$v_3 = 5$	$v_4 = 7$	$Supply$
$u_1 = 0$				7	7
$u_2 = 2$	3		7		10
$u_3 = 1$	2	8		8	18
$Demand$	5	8	7	15	

Since all the current reduced costs are non–negative, this is the optimal solution.

$$The\ minimum\ cost = Total\ Cost = 901$$

Answer provided by AssignmentExpert.com

Print to PDF without this message by purchasing novaPDF (http://www.novapdf.com/)