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Comp. edu.

demand for the month $i = d_i$

Number of workers during i month = z_i

$$z_1 = 30$$

number of Carpets made overtime in month $i = y_i$

Number of \checkmark \checkmark during the i th month = x_i

Workers hired & hired at the beginning of the month $i = h_i$

Workers fired at the beginning of the month = f_i

s_i = number of stored Carpets stored at end of i ;

$z_i, y_i, x_i, h_i, f_i, s_i, s_0, h_0 \geq 0 \quad i = 1, 2, 3$

Total Carpets Made; $x_i = 20z_i + y_i$

Potential no of workers at start of each month. $z_i = z_{i-1} + h_i - f_i$

number of stored Carpets. $s_i = s_{i-1} + x_i - d_i$

Limitation of overtime

$$y_i \leq 6z_i$$

$$\therefore \min 2000 \sum z_i + 320 \sum h_i + 400 \sum f_i + 3 \sum s_i + 180 \sum y_i$$

Apd slack:

$$x_{11} = x_1$$

$$x_{12} = x_2$$

$$x_{21} = x_3$$

$$x_{22} = x_4$$

$$Z = 2x_1 + 3x_2 + 4x_3 + x_4$$

$$x_1 + x_2 + S_1 = 15$$

$$x_3 + x_4 + S_2 = 8$$

$$x_1 + x_3 + S_3 = 10$$

$$x_2 + x_4 + S_4 = 13$$

$$Z - 2x_1 - 3x_2 - 4x_3 - x_4 = 0$$

Iter	Basic	x_1	x_2	x_3	x_4	S_1	S_2	S_3	S_4	RHS	Ratio
0	Z	-2	-3	-4	-1	0	0	0	0	0	0
	S_1	1	1	0	0	1	0	0	0	15	15/1 = 15
	S_2	0	0	1	1	0	1	0	0	8	8/1 = 8
	S_3	1	0	1	0	0	0	1	0	10	10/1 = 10
	S_4	0	1	0	1	0	0	0	1	13	13/1 = 13

> negative value = -4

	x_1	x_2	x_3	x_4	S_1	S_2	S_3	S_4	RHS	Ratio
$(Z_1 + 4x_3)$ Z	-2	-3	0	3	0	4	0	0	32	
S_1	1	1	0	0	1	0	0	0	15	15/1 = 15
x_3	0	0	1	1	0	1	0	0	8	8/1 = 8
$(S_3 - x_3)$ S_3	1	0	0	-1	0	-1	1	0	7	7/1 = 7
S_4	0	1	0	1	0	0	0	1	13	13/1 = 13

$Z = -3 \therefore = x_2$ column

Row	x_1	x_2	x_3	x_4	s_1	s_2	s_3	s_4	RHS	Ratio
Z	-2	0	0	6	0	4	0	3	71	
$(s_1 - x_2)$	1	0	0	-1	1	0	0	-1	2	$2/1 = 2$
x_3	0	0	1	1	0	1	0	0	8	$8/0 = 8$
s_3	1	0	0	-1	0	-1	1	0	2	$2/1 = 2$
x_2	0	1	0	1	0	0	0	1	13	$13/0 =$

$Z = -2 \therefore = x_1$ column

Row	x_1	x_2	x_3	x_4	s_1	s_2	s_3	s_4	RHS
$g(x_1 + m)$ Z	0	0	0	4	2	4	0	1	75
x_1	1	0	0	-1	1	0	0	-1	2
x_3	0	0	1	1	0	1	0	0	8
s_3	0	0	0	0	-1	-1	1	1	6
x_2	0	1	0	1	0	0	0	1	13

$Z_{min} = 75$