Product (per package)	Cost to make a package ($)	Packing cost ($) (per package)	Materials needed (Kg) (per package)
A x_1	1.50	0.50	0.2
B x_2	1.70	0.35	0.18
C x_3	1.80	0.60	0.16
	100	30	10

(a)

Max: $Z = 2.5X_1 + 2.3X_2 + 2X_3$

Subject to

$$2X_1 + 2.05X_2 + 2.4X_3 \leq 100$$

$$0.5X_1 + 0.35X_2 + 0.6X_3 \leq 30$$

$$0.2X_1 + 0.18X_2 + 0.16X_3 \leq 10$$

$$X_1, X_2, X_3 \geq 0$$

(b) MAX $Z = 2.5X_1 + 2.3X_2 + 2X_3$

$$2X_1 + 2.05X_2 + 2.4X_3 \leq 100$$
$$0.5X_1 + 0.35X_2 + 0.6X_3 \leq 30$$
$$0.2X_1 + 0.18X_2 + 0.16X_3 \leq 10$$
$$X_1, X_2, X_3 \geq 0$$

A   B
$-C^T + C_o^T A$ $C_o^T B$

	X_1	X_2	X_3	X_4	X_5	X_6	
X_1	1	~~2.05~~ 1.025	~~2.4~~ 1.2	0.5	0	0	~~100~~ 50
X_5	~~0.5~~ 0	~~0.35~~ −0.1625	~~0.6~~ 0	$\not{}$ −0.25	1	0	~~30~~ 5
X_6	~~0.2~~ 0	~~0.18~~ −0.025	~~0.16~~ −0.08	$\not{}$ −0.1	0	1	~~10~~ 0
	~~−2.5~~ 0	~~−2.3~~ 0.2625	~~−2~~ 1	$\not{2}$ 1.25	0	0	~~0~~ 125

$) \times (-0.5)$

T

	X_1	X_2	X_3	X_4	X_5	X_6	
X_1	1	1.025	1.2	0.5	0	0	50
X_5	0	−0.1625	0	−0.25	1	0	5
X_6	0	−0.025	−0.08	−0.1	0	1	0
	0	0.2625	1	1.25	0	0	125

S

y^T

$X_1 = 50$ $X_2 = X_3 = X_4 = X_6 = 0$ $X_5 = 5$ $Z = 125$

(c)

maximum cut : $30 - 50 \times 0.5 = 5$