

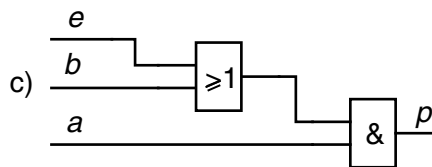
**Primera part****Exercici 1**

Q1 c Q2 c Q3 c Q4 d Q5 c

**Exercici 2**

a	e	b	p
0	0	0	0
0	0	1	0
0	1	0	0
a) 0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

$$b) p = a \cdot \bar{e} \cdot b + a \cdot e \cdot \bar{b} + a \cdot e \cdot b = a(\bar{e} \cdot b + e(\bar{b} + b)) = a(e + b)$$

**Segona part****OPCIÓ A****Exercici 3**

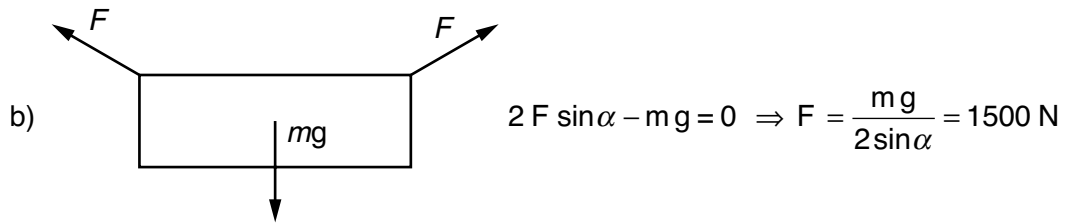
$$a) I_{\text{total}} = 12 \cdot \frac{P}{U} = 12 \cdot 300 / 220 = 16,36 \text{ A}$$

$$b) \text{cost} = c E_{\text{total}} = c P_{\text{total}} t = c U I_{\text{total}} t = 0,08 \cdot 220 \cdot 16,36 \cdot 5 / 1000 = 1,44 \text{ EUR}$$

$$c) P_{125} = \frac{P_{220}}{U_{220}^2} U_{125}^2 = \frac{300}{220^2} 125^2 = 96,85 \text{ W}$$

#### Exercici 4

a)  $l_3 = l_1 + 2 l_2 \cos \alpha = 2,4 + 2 \cdot 0,8 \cdot \frac{\sqrt{3}}{2} = 3,786 \text{ m}$



c)  $\tau = \frac{F}{S} = \frac{F}{\pi d^2 / 4} = \frac{1500}{\pi 0,005^2 / 4} = 76,39 \text{ MPa}$

#### OPCIÓ B

#### Exercici 3

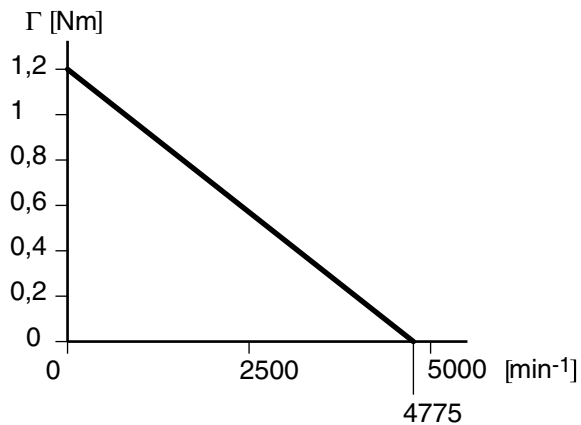
a)  $\Gamma_{m0} = 0,05 U = 0,05 \cdot 24 = 1,2 \text{ Nm}$

b)  $\Gamma_m = 0,05 U - 0,0024 \omega = 0 \rightarrow \omega = \frac{0,05 U}{0,0024} = \frac{0,05 \cdot 24}{0,0024} = 500 \text{ rad / s}$

$n = \frac{500 \cdot 60}{2 \pi} = 4775 \text{ min}^{-1}$

c)  $P_{1200} = (0,05 U - 0,0024 \omega) \omega = (0,05 \cdot 24 - 0,0024 \frac{1200 \cdot 2 \cdot \pi}{60}) \frac{1200 \cdot 2 \cdot \pi}{60} = 112,9 \text{ W}$

c)



#### Exercici 4

a)  $P_e = P_t \eta = c p_c \eta = 8 \cdot 32 \cdot 0,36 = 92,16 \text{ MW}$

b)  $I = \frac{P_e}{\sqrt{3} U \cos \varphi} = \frac{92,16 \cdot 10^6}{\sqrt{3} 110 \cdot 10^3 \cdot 0,95} = 509,2 \text{ A}$

c)  $c_{12h} = c t = 8 \cdot 12 \cdot 3600 = 345,6 \cdot 10^3 \text{ kg} = 345,6 \text{ t}$

$E_{\text{produïda}} = P_e t = 92,16 \cdot 10^3 \cdot 12 = 1,106 \cdot 10^6 \text{ kW h}$