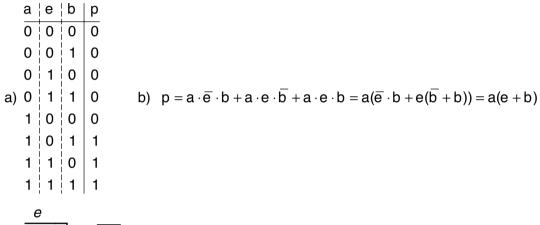
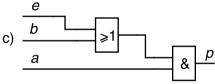
Primera part

Exercici 1 Q1 c Q2 c Q3 c Q4 d Q5 c

Exercici 2





Segona part

OPCIÓ A

Exercici 3

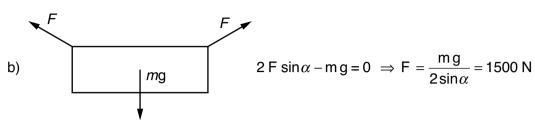
a)
$$I_{total} = 12 \cdot \frac{P}{U} = 12 \cdot 300 / 220 = 16,36 \text{ A}$$

b) cost = c
$$E_{total}$$
 = c P_{total} t = c U I_{total} t = 0,08·220·16,36·5 / 1000 = 1,44 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)
$$I_3 = I_1 + 2I_2 \cos \alpha = 2,4 + 2 \cdot 0,8 \cdot \frac{\sqrt{3}}{2} = 3,786 \text{ m}$$



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

OPCIÓ B

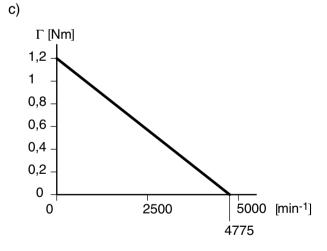
Exercici 3

a)
$$\Gamma_{m0} = 0.05 \text{ U} = 0.05.24 = 1.2 \text{ Nm}$$

b)
$$\Gamma_{\rm m} = 0.05 \, {\rm U} - 0.0024 \, \omega = 0 \rightarrow \omega = \frac{0.05 \, {\rm U}}{0.0024} = \frac{0.05 \cdot 24}{0.0024} = 500 \, {\rm rad/s}$$

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

c)
$$P_{1200} = (0.05 \text{ U} - 0.0024 \ \omega)\omega = (0.05 \cdot 24 - 0.0024 \frac{1200 \cdot 2 \cdot \pi}{60}) \frac{1200 \cdot 2 \cdot \pi}{60} = 112.9 \text{ W}$$



Exercici 4

a)
$$P_e = P_t \eta = c p_c \eta = 8.32.0,36 = 92,16 MW$$

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

c)
$$c_{12h} = c t = 8.12.3600 = 345,6.10^3 \text{ kg} = 345,6 t$$

 $E_{produ\"{i}da} = P_e t = 92,16.10^3.12 = 1,106.10^6 \text{ kW h}$