SÈRIE 4

Primera part

Exercici 1

Q1 b **Q2** c **Q3** d **Q4** d **Q5** b

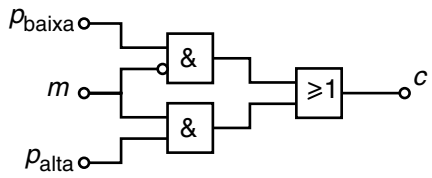
Exercici 2

a)

p_{baixa}	p_{alta}	m	c
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	x ← No és possible
1	1	1	x ← No és possible

b) $c = p_{baixa} \cdot \bar{m} + p_{alta} \cdot m$

c)



Segona part

OPCIÓ A

Exercici 3

a) $\varphi_1 = \arctan\dfrac{L}{3L} = 18,43°$ $\qquad$ $\varphi_2 = \arctan\dfrac{L}{5L} = 11,31°$

b) $\sum \boldsymbol{F}_{ext} = 0 \quad \rightarrow \quad \begin{cases} F_1 \cos\varphi_1 - F_2 \cos\varphi_2 = 0 \\ F_1 \sin\varphi_1 + F_2 \sin\varphi_2 - m\mathrm{g} = 0 \end{cases}$

$$F_1 = m\mathrm{g}\frac{\cos\varphi_2}{\sin(\varphi_1 + \varphi_2)} = 67,84 \text{ kN}$$

$$F_2 = m\mathrm{g}\frac{\cos\varphi_1}{\sin(\varphi_1 + \varphi_2)} = 65,63 \text{ kN}$$

c) $\sigma_1 = \dfrac{F_1}{S} = 383,9 \text{ MPa}$; $\sigma_2 = \dfrac{F_2}{S} = 371,4 \text{ MPa}$

Exercici 4

a) $\eta_{alt} = \dfrac{P_{elèc}}{P_m} = 0,6522$

b) $\eta_{motor} = \dfrac{P_m\ t_{au}}{E_{dipòsit}} = \dfrac{P_m\ t_{au}}{V\ \rho\ p_c} = 0,3258$

c) $c_e = \dfrac{V\ \rho}{P_m\ t_{au}} = \dfrac{1}{p_c \eta_{motor}} = 240,2\ \dfrac{g}{kW \cdot h}$

OPCIÓ B

Exercici 3

a) $P_{cremador} = c\ p_c = 990\ W$ $\qquad P_{estufa} = 4P_{cremador} = 3960\ W$

b) $t = \dfrac{m_b}{4 \cdot c} = \dfrac{p_c\ m_b}{P_{estufa}} = 43,40\ h$

c) $p = \dfrac{p_{bom}}{p_c\ m_b} = 0,0654\ €/(kW \cdot h)$

Exercici 4

a) $L = 2\left(12 \cdot r + 2\pi \cdot r\right) = 18,28\ m$ $\qquad L_t = n \cdot L = 548,5\ m$

b) $P = P_{tub} \cdot L = 1,097\ kW$ $\qquad P_t = n \cdot P = 32,91\ kW$

c) $E = P_t \cdot t = 197,5\ kW \cdot h$