

SÈRIE 5

Primera part

Exercici 1

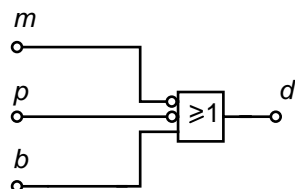
Q1 d Q2 c Q3 c Q4 c Q5 d

Exercici 2

<i>m</i>	<i>p</i>	<i>b</i>	<i>d</i>
0	0	0	1
0	0	1	1
0	1	0	1
a) 0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

b) $\bar{d} = m \cdot p \cdot \bar{b} \Rightarrow d = \overline{m \cdot p \cdot \bar{b}} = \bar{m} + \bar{p} + b$

c)



Segona part

OPCIÓ A

Exercici 3

a) $R = \frac{U^2}{P} = \frac{230^2}{800} = 66,13 \Omega$

b) $R = \rho \frac{l}{S}; l = \frac{RS}{\rho} = \frac{66,13 \cdot 0,3^2 \cdot 10^{-6} \cdot \pi}{4,9 \cdot 10^{-7} \cdot 4} = 9,539 \text{m}$

c) $E = P \cdot t = 800 \cdot 3 \cdot \frac{50}{80} = 1500 \text{ Wh} = 1,5 \text{ kW} \cdot \text{h} = 5,4 \text{ MJ}$

Exercici 4

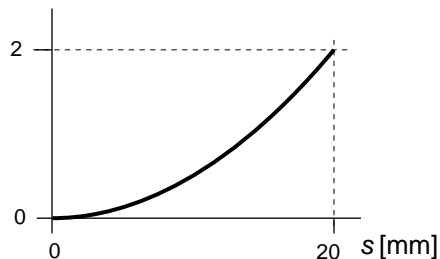
$$a) s = \frac{1}{2}(L_1 + L_2)L_3 = 0,22 \text{ m}^2 ; \quad p = L_1 + L_2 + L_3 + \sqrt{L_3^2 + (L_1 - L_2)^2} = 2 \text{ m}$$

$$v = c_1 s + c_2 p = 2,76 \text{ EUR}$$

$$b) m = s e \rho = 0,22 \cdot 10^{-3} \cdot 0,7 \cdot 10^3 = 1,54 \text{ kg}$$

OPCIÓ B**Exercici 3**

$$a) \Delta h [\text{mm}]$$



$$b) \sigma_n = \frac{F}{s} = \frac{mg}{\pi d^2/4} = 33,18 \text{ N/mm}^2 = 33,18 \text{ MPa}$$

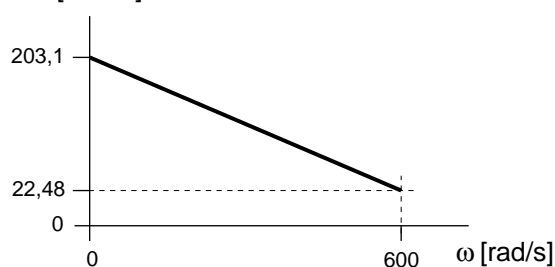
$$\varepsilon = \sigma / E = 13,27 \cdot 10^{-3}$$

$$c) \Delta l = \varepsilon l = 7,963 \text{ mm}$$

d) No varia, és sempre igual al pes del bloc

Exercici 4

$$a) \Gamma [\text{mN}\cdot\text{m}]$$



b) Sense càrrega el motor es podrà accelerar fins que $\Gamma=0$.

$$\omega_{\text{màx}} = \frac{k_1 U - k_2}{k_3} = 674,7 \text{ rad/s}$$

$$n = 3400 \text{ min}^{-1} \Rightarrow \omega = \frac{2\pi n}{60} = 356,0 \text{ rad/s}$$

$$c) \Gamma_{3400 \text{ min}^{-1}} = 95,91 \text{ mN}\cdot\text{m}$$

$$E = P \cdot \Delta t = \Gamma \cdot \omega \cdot \Delta t = 68,30 \text{ Wh} = 245,9 \text{ kJ}$$