

**SÈRIE 4**

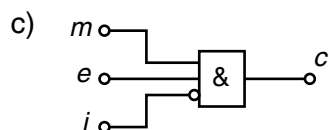
**Primera part**

**Exercici 1**

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

**Exercici 2**

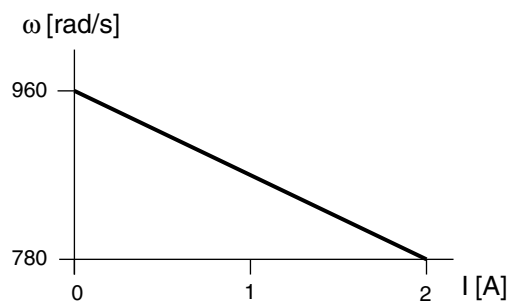
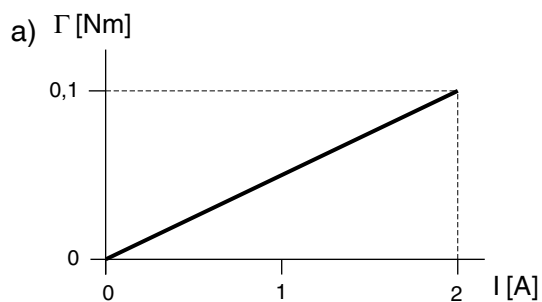
	<i>e</i>	<i>i</i>	<i>m</i>	<i>c</i>	
	0	0	0	0	
	0	0	1	0	
	0	1	0	0	
a)	0	1	1	0	b) $c = e \cdot \bar{i} \cdot m$
	1	0	0	0	
	1	0	1	1	
	1	1	0	0	
	1	1	1	0	



**Segona part**

**OPCIÓ A**

**Exercici 3**



$$\left. \begin{aligned}
 \text{b) } \Gamma &= c \cdot I = 0,05 \text{ N} \cdot \text{m} \\
 \omega &= \frac{U - R \cdot I}{c} = 870 \text{ rad/s}
 \end{aligned} \right\} \rightarrow P_m = \Gamma \cdot \omega = 43,5 \text{ W}$$

$$P_e = U \cdot I = 48 \text{ W}$$

c)  $\eta = \frac{P_m}{P_e} = 0,9063 \rightarrow \eta = 90,63\%$

**Exercici 4**

$$a) \sum F_{\text{verticals}}|_{\text{cabina}} = 0 \rightarrow F_{\text{cable}} - mg = 0 \rightarrow F_{\text{cable}} = mg = 10,79 \text{ kN}$$

$$\sum M|_{\text{polijija}} = 0 \rightarrow 2F_{\text{cable}} - F_{\text{ch}} = 0 \rightarrow F_{\text{ch}} = 2F_{\text{cable}} = 21,58 \text{ kN}$$

$$b) \rho_{\text{int}} = \frac{F_{\text{ch}}}{S_{\text{int}}} = \frac{F_{\text{ch}}}{\pi \left( \frac{d_{\text{int}}}{2} \right)^2} = 2,747 \text{ MPa}$$

$$c) \sigma_{\text{tija}} = \frac{F_{\text{ch}}}{S_{\text{tija}}} = \frac{F_{\text{ch}}}{\pi \left( \frac{d_{\text{tija}}}{2} \right)^2} = 6,502 \text{ MPa}$$

$$d) q = S_{\text{int}} \frac{v}{2} \rightarrow v = \frac{2q}{S_{\text{int}}} = 1,528 \text{ m/s}$$

**OPCIÓ B****Exercici 3**

$$a) v = \frac{c_{\text{ev}}}{h \cdot b} = 280 \text{ m/h}$$

$$b) c_{\text{c}} = \rho_{\text{c}} \cdot \rho_{\text{c}} \cdot V = 130,9 \text{ MJ}$$

$$c) \eta = \frac{E_{\text{mot}}}{c_{\text{c}}} = \frac{P_{\text{mot}} \cdot t_{\text{au}}}{c_{\text{c}}} = 0,2805$$

**Exercici 4**

$$a) I = U/R = 0,5 \text{ A}; \quad P = U^2/R = 6 \text{ W}$$

$$b) E_{\text{pols}} = P \cdot t_{\text{p}} \rightarrow E = E_{\text{pols}} \cdot n_{\text{pols}} = P \cdot t_{\text{p}} \frac{1}{T} = 3 \text{ J}$$

$$c) P_{\text{mit}} = \frac{E}{1} = 3 \text{ W}$$