



## SÈRIE 4

### Exercici 1

Q1 c    Q2 c    Q3 a    Q4 a    Q5 c

### Exercici 2

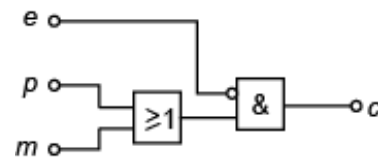
a)

$m$	$p$	$e$	$c$
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

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

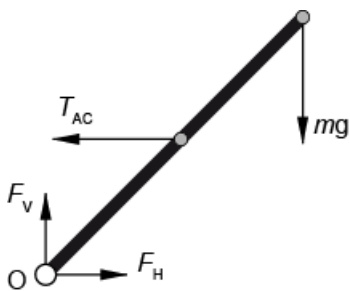
$$c = \bar{e} \cdot (p + m)$$

c)



### Exercici 3

a)



$$b) \sum M(O) = 0 \rightarrow mg \cdot 2L = T_{AC}L \rightarrow T_{AC} = 3923 \text{ N}$$

$$c) \sum F_{\text{verticals}} = 0 \rightarrow F_V = mg = 1961 \text{ N}$$

$$\sum F_{\text{horizontals}} = 0 \rightarrow F_H = T_{AC} \rightarrow F_H = 3923 \text{ N}$$

$$d) \sigma = \frac{T_{AC}}{\frac{\pi \cdot d^2}{4}} = 555,0 \text{ MPa};$$



**Criteris específics de correcció i qualificació** per ser fets públics un cop finalitzades les proves

**Tecnologia industrial**

#### Exercici 4

$$a) P_{\text{aigua}} = q \cdot \rho \cdot g \cdot h = 21,25 \text{ MW}$$

$$b) P_{\text{subm}} = P_a \eta_{\text{central}} = 19,77 \text{ MW}$$

$$c) E_{\text{útil}} = P_{\text{subm}} \cdot t = 158,1 \cdot 10^6 \text{ Wh} = 569,1 \cdot 10^9 \text{ J}$$

$$d) E_{\text{anual}} = E_{\text{útil}} \cdot 310 = 49,00 \cdot 10^9 \text{ Wh} = 176,4 \cdot 10^{12} \text{ J}$$

$$\text{habitatges} = \frac{E_{\text{anual}}}{E_{\text{cons}}} = 14053 \text{ habitatges}$$

#### Exercici 5

$$a) E_{\text{diss}} = E_{\text{bat}} \cdot (1 - \eta_{\text{motor}} \eta_{\text{red}}) = 158,4 \text{ kJ}$$

$$b) t_{\text{màx}} = \frac{E_{\text{bat}} - E_{\text{diss}}}{P_{\text{subm}}} = 5126 \text{ s} = 1,424 \text{ h}; \quad s_{\text{màx}} = v \cdot t = 35,60 \text{ km}$$

$$c) \omega_r = \frac{v}{d/2} = 19,56 \text{ rad/s}$$

$$d) \omega_{\text{motor}} = \frac{\omega_r}{\tau} = 301,0 \text{ rad/s}; \quad \Gamma = \frac{P_{\text{sub}} / \eta_{\text{red}}}{\omega_{\text{motor}}} = 0,8932 \text{ Nm}$$

#### Exercici 6

$$a) R_{\text{eq}} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}} = 35 \Omega$$

$$I_{\text{tot}} = \frac{U}{R_{\text{eq}}} = 6,571 \text{ A}$$

$$b) P_{\text{elèctr}} = U \cdot I = 1511 \text{ W};$$

$$c) E_{\text{cons}} = P_{\text{elèctr}} \cdot t = 9,069 \text{ kWh} = 32,65 \text{ MJ}$$

$$d) c_{\text{diari}} = E_{\text{cons}} \cdot c = 1,088 \text{ €}$$