



SÈRIE 4

Exercici 1

Q1 b Q2 c Q3 d Q4 c Q5 a Q6 d Q7c Q8 b

Exercici 2

a)

$$P_{\text{aigua}} = q \cdot \rho \cdot g \cdot h = 14 \cdot 1000 \cdot 9,807 \cdot 882 = 121,1 \text{ MW}$$

b)

$$\eta = \frac{2P_{\text{subm}}}{P_{\text{aigua}}} = \frac{114}{121,1} = 94,14 \%$$

c)

$$t = \frac{E_{\text{anual}}}{2P_{\text{subm}}} = \frac{190400}{2 \cdot 57} = 1670 \text{ h}$$

d)

$$n = \frac{E_{\text{anual}}}{E_{\text{cons}}} = \frac{190400}{3400 \times 10^{-3}} = 56000 \text{ habitatges}$$

Exercici 3

a)

$$i = \frac{n_{\text{mot}}}{n_{\text{hel}}} = \frac{1430}{40} = 35,75$$

$$\Gamma_{\text{hel}} = k\omega_{\text{hel}} = kn_{\text{hel}} \frac{2\pi}{60} = 105 \cdot 40 \cdot \frac{2\pi}{60} = 439,8 \text{ Nm}$$



b)

$$P_{\text{mot}} = \frac{\Gamma_{\text{hel}} \omega_{\text{hel}}}{\eta} = \frac{439,8 \cdot 40 \frac{2\pi}{60}}{0,7} = 2632 \text{ W}$$

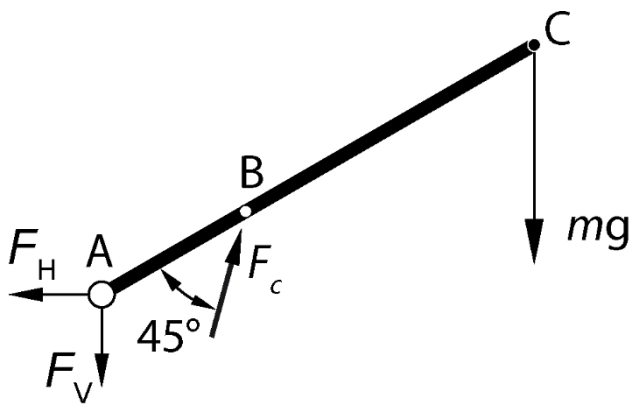
$$\Gamma_{\text{mot}} = \frac{P_{\text{mot}}}{\omega_{\text{mot}}} = \frac{2632}{1430 \frac{2\pi}{60}} = 17,58 \text{ Nm}$$

c)

Cal escollir un motor amb parell nominal i potència per sobre de les necessitats determinades a l'apartat anterior. Per això cal escollir el Motor C.

Exercici 4

a)



b)

$$\sum M(A) = 0 \quad \rightarrow \quad F_C \sin(45) L - mg \cos(30) 3L = 0 \quad \rightarrow F_C = 3063 \text{ N}$$

c)

$$\left. \begin{array}{l} \sum F_{\text{horizontals}} = 0 \quad \rightarrow \quad F_C \cos(75) - F_H = 0 \\ \sum F_{\text{verticals}} = 0 \quad \rightarrow \quad F_C \sin(75) - mg - F_V = 0 \end{array} \right\} \begin{array}{l} F_H = 792,7 \text{ N} \\ F_V = 2125 \text{ N} \end{array}$$