SÈRIE 5

Exercici 1

Q1 b

Q2 a

Q3 d

Q4 a

Q5 d

Exercici 2

a)

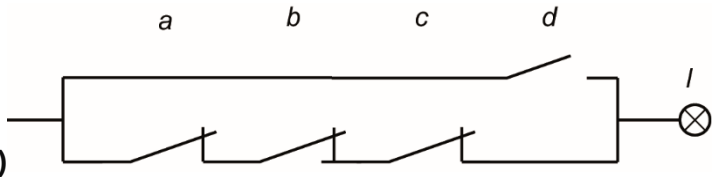
a	*b*	*c*	*d*	*l*
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

b)

$$l = \bar{a}\bar{b}\bar{c}\bar{d} + \bar{a}\bar{b}\bar{c}d + \bar{a}\bar{b}cd + \bar{a}b\bar{c}d + \bar{a}bcd + a\bar{b}\bar{c}d + a\bar{b}cd + ab\bar{c}d + abcd$$

$$l = \bar{a}\bar{b}\bar{c} + d$$

c)



Exercici 3

a)

$$E_{\text{cons}} = m\, p_c = 78{,}45\,\text{kW h} = 282{,}4\,\text{MJ}$$

b)

$$E_{\text{útil}} = E_{\text{cons}}\eta = 69{,}82\,\text{kWh} = 251{,}4\,\text{MJ}$$

$$c_e = \frac{p}{E_{\text{útil}}} = 85{,}93\times10^{-3}\,€\,/\,\text{kWh}$$

c)

$$t = \frac{m}{q_{\text{pèl}}} = 10{,}11\,\text{h}$$

d)

$$m_{\text{cendra}} = m\, r_{\text{cendra}} = 105\,\text{g}$$

Exercici 4

a)

$$\tau = \frac{\omega_{\text{roda}}}{\omega_{\text{motor}}} = \frac{z_1 z_3 z_5}{z_2 z_4 z_6} = 92{,}67 \times 10^{-3}$$

b)

$$\omega_{\text{roda}} = \tau \omega_{\text{mot}} = \tau \frac{n_{\text{mot}} 2\pi}{60}$$

$$v = \omega_{\text{roda}} \frac{d}{2} = 11{,}65\,\text{m/s} = 41{,}92\,\text{km/h}$$

c)

$$P_{\text{útil}} = P_{\text{mot}} \eta; \qquad \Gamma = \frac{P_{\text{útil}}}{\omega_{\text{roda}}} = 347{,}8\,\text{Nm}$$

Exercici 5

a)

$$R = \rho \frac{L}{\pi \frac{d^2}{4}} = 14{,}11\,\Omega$$

b)

$$P_{\text{elèctr}} = \frac{U^2}{R}; \qquad P_{\text{útil}} = \eta P_{\text{elèctr}} = 3{,}375\,\text{kW}$$

c)

$$I = \frac{U}{R} = 16{,}30\text{A}$$

d)

$$E_{\text{cons}} = P_{\text{elèctr}} t = 1{,}875\,\text{kWh} = 6{,}750\,\text{MJ}$$

Exercici 6

a)

$$E_{\text{útil}} = m\,ce\,\Delta T; \quad E_{\text{cons}} = \frac{E_{\text{útil}}}{\eta} = 7{,}207\,\text{MJ}$$

b)

$$m_{\text{dutxa}} = \frac{E_{\text{cons}}}{pc_{\text{butà}}}; \qquad n = \frac{m_{\text{butà}}}{m_{\text{dutxa}}} = 82{,}73 \text{ dutxes} \rightarrow \text{Es podran fer 82 dutxes de 75 litres}$$

c)

$$p_{\text{dutxa}} = p_{\text{aigua}} V + m_{\text{dutxa}} p_{\text{butà}} / m_{\text{butà}} = 0{,}2832\,€$$