SÈRIE 5

Exercici 1

Q1 d Q2 b Q3 a Q4 b Q5 c Q6 a Q7 d Q8 b

Exercici 2

t	r	h	d	b
0	0	0	0	0
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	0
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	0
1	1	1	0	0
1	1	1	1	0

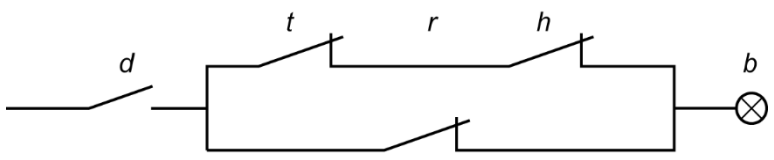
$b = \bar{t}\,\bar{r}\,\bar{h}\,d + \bar{t}\,\bar{r}\,h\,d + \bar{t}\,r\,\bar{h}\,d + t\,\bar{r}\,\bar{h}\,d + t\,\bar{r}\,h\,d$

simplificant

$b = \bar{t}\,\bar{h}\,d + \bar{r}\,d = d\left(\bar{t}\,\bar{h} + \bar{r}\right)$

o també

$b = \bar{t}\,r\,\bar{h}\,d + \bar{r}\,d = d\left(\bar{t}\,r\,\bar{h} + \bar{r}\right)$



Exercici 3

3.1.

$$v = \frac{P_{\text{útil}}}{F} = \frac{P_{\text{subm}}\eta_{\text{trans}}}{F} = 33{,}5 \text{ m/s} = 120{,}6 \text{ km/h}$$

3.2.

$$\omega_{\text{roda}} = \frac{v_{\text{màx}}}{r} = 83{,}75 \text{ rad/s}$$

$$\tau = \frac{\omega_{\text{roda}}}{\omega_{\text{mot}}} = \frac{\omega_{\text{roda}}}{n_{\text{mot}}\frac{2\pi}{60}} = 0{,}1600$$

3.3.

$$P_{\text{cal}} = \frac{P_{\text{subm}}}{\eta_{\text{mot}}} = 335 \text{ kW}$$

$$q = \frac{P_{\text{cal}}}{p_{\text{c}}} = 7{,}976 \text{ g/s}$$

Exercici 4

4.1.

$$P_{\text{útil}} = mgv$$

$$\eta = \frac{P_{\text{útil}}}{P_{\text{elèc}}} = \frac{mgv}{P_{\text{elèc}}} = 69{,}60\,\%$$

4.2.

$$\omega_{\text{red}} = \tau n_{\text{mot}} \frac{2\pi}{60} = 1{,}885 \text{ rad/s}$$

$$\Gamma_{\text{red}} = \frac{P_{\text{útil}}}{\omega_{\text{red}}} = 2289 \text{ Nm}$$

4.3.

$$v' = 1{,}5v$$

$$P'_{\text{útil}} = mgv' = 1{,}5P_{\text{útil}}$$

$$P'_{\text{elèc}} = \frac{P'_{\text{útil}}}{\eta} = \frac{1{,}5P_{\text{útil}}}{\eta} = 1{,}5P_{\text{elèc}} = 1{,}5 \cdot 6{,}2 = 9{,}3 \text{ kW}$$