

SÈRIE 2

Primera part

Exercici 1

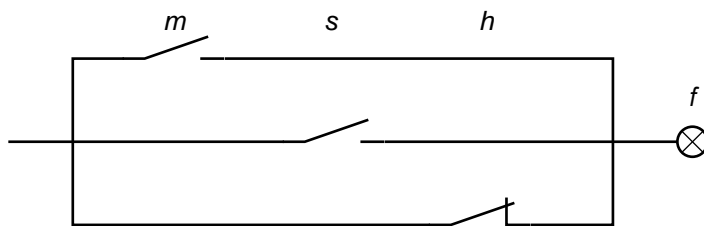
Q1 d Q2 a Q3 d Q4 b Q5 c

Exercici 2

| m | s | h | f |
|------|-----|-----|-----|
| 0 | 0 | 0 | 1 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 |
| a) 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

$$b) \quad f = \bar{m} \cdot \bar{s} \cdot \bar{h} + \bar{m} \cdot s \cdot \bar{h} + \bar{m} \cdot s \cdot h + m \cdot \bar{s} \cdot \bar{h} + m \cdot \bar{s} \cdot h + m \cdot s \cdot \bar{h} + m \cdot s \cdot h = \overline{m \cdot s \cdot h} = m + s + \bar{h}$$

c)



Segona part

OPCIÓ A

Exercici 3

a) $m = \rho V = \rho (0,5 a b e) = 1200 (0,5 \cdot 0,5 \cdot 0,9 \cdot 0,008) = 2,16 \text{ kg}$

b) $\Sigma M(O) = 0 \Rightarrow F a - m g (a/3) = 0 \Rightarrow F = m g/3 = 7,061 \text{ N}$

$F_{OH} = 0$

$F_{OV} = m g - F = 14,12 \text{ N}$ (positiva cap amunt)

c) $\Sigma M(O) = 0 \Rightarrow F_p b - m g (a/3) = 0 \Rightarrow F_p = m g a / (3 b) \Rightarrow F_p = F a / b = F 5/9$

$\Rightarrow F_p < F \Rightarrow$ Cal fer menys força si s'aplica a P

Exercici 4

a) $E_{\text{dia}} = V_a \rho c_e \Delta T = 60 \cdot 1 \cdot 4,18 \cdot 10^3 (60 - 13) = 11,79 \text{ MJ} = 3,274 \text{ kW h}$

b) $E_{\text{solar}} = I \cdot t = 16,28 \text{ MJ/m}^2 = 4,522 \text{ kW h/m}^2$

c) $\eta = 0,78 - 3,6 \frac{50 - 17}{476} = 0,5304 \Rightarrow 53,04\%$

d) $S = \frac{E_{\text{dia}}}{E_{\text{solar}} \eta} = \frac{3,274}{4,522 \cdot 0,5304} = 1,365 \text{ m}^2$

OPCIÓ B

Exercici 3

a) $\eta = \frac{P_1}{P_{\text{mag}}} = \frac{800}{920} = 0,8696 \Rightarrow 86,96\%$

b) $P_2 \rightarrow \frac{650}{800} = 81,25\%$ $P_3 \rightarrow \frac{450}{800} = 56,25\%$ $P_4 \rightarrow \frac{160}{800} = 20\%$ $P_5 \rightarrow \frac{90}{800} = 11,25\%$

c) $P_{\text{aux}} = P_{\text{consum}} - P_{\text{mag}} = 1250 - 920 = 330 \text{ W}$

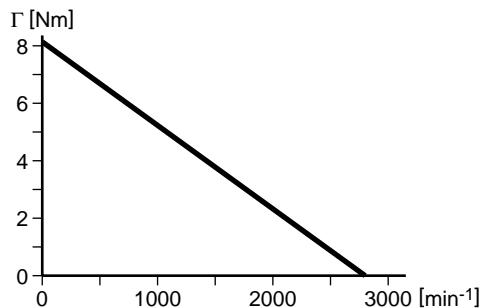
$$E_{\text{elèc}} = (P_{\text{aux}} + \frac{P_2}{\eta}) t = (330 + \frac{650}{0,8696}) 6 \cdot 60 = 387,9 \text{ kJ} = 0,1078 \text{ kW h}$$

Exercici 4

a) $P = \Gamma \omega$; $\Gamma = (0,84 - 0,0003 n) 30/\pi$

$$\Gamma_0 = 0,84 \cdot 30/\pi = 8,021 \text{ Nm}$$

b)



c) $\Gamma = \Gamma_{\text{màq}}$

$$(0,84 - 0,0003 n) 30/\pi = 6 \text{ Nm} \Rightarrow n = 705,6 \text{ min}^{-1}$$