

**SÈRIE 4**

**Primera part**

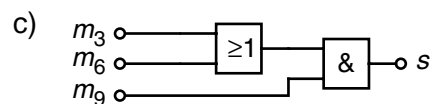
**Exercici 1**

Q1 b      Q2 c      Q3 c      Q4 d      Q5 d

**Exercici 2**

	$m_3$	$m_6$	$m_9$	$c$
	0	0	0	0
	0	0	1	0
	0	1	0	0
a)	0	1	1	1
	1	0	0	0
	1	0	1	1
	1	1	0	0
	1	1	1	1

b)  $s = (m_3 + m_6) \cdot m_9$



**Segona part**

**OPCIÓ A**

**Exercici 3**

a)  $P = q \cdot \rho_{\text{aigua}} \cdot c_e \cdot \Delta t = 22,64 \text{ kW}$

b)  $\eta = \frac{P}{q_{\text{butà}} \cdot \rho_{\text{butà}}} = 0,8258$

c)  $t_{\text{mín}} = \frac{V}{q} = 7,692 \text{ min} = 461,5 \text{ s} \quad m = t_{\text{mín}} \cdot q_{\text{butà}} = 269,2 \text{ g}$

#### Exercici 4

$$a) m_{\max} = \frac{\sigma \cdot \pi \cdot \frac{d^2}{4}}{g} = 175,2 \text{ g}$$

$$b) R = \rho \frac{L}{\pi \cdot \frac{d^2}{4}} = 2,384 \text{ } \Omega$$

$$c) \left. \begin{array}{l} P = \rho_p \cdot L \\ P = R \cdot I^2 \end{array} \right\} \rightarrow I = \sqrt{\frac{\rho_p \cdot L}{R}} = 1,122 \text{ A} \quad U = R \cdot I = 2,675 \text{ V}$$

#### OPCIÓ B

#### Exercici 3

$$a) I = \frac{P}{U} = 2,609 \text{ A}$$

$$b) L = \frac{R \cdot \pi \cdot \frac{d^2}{4}}{\rho} = \frac{P \cdot \pi \cdot \frac{d^2}{4}}{I^2 \cdot \rho} = 5,653 \text{ m}$$

$$c) E = P \cdot t = 0,03 \text{ kW} \cdot \text{h}; \quad c_e = E \cdot c = 0,003 \text{ } \text{€}$$

#### Exercici 4

$$a) p = \rho \cdot e \cdot (b \cdot h - 4r^2 + \pi r^2) \cdot g = 142,5 \text{ N}$$

$$b) s = 2b + 2h - 8r + 2\pi r = 4,028 \text{ m}$$

$$c) V = 3 \cdot 2 \cdot (b \cdot h - 4r^2 + \pi r^2) \cdot \frac{1}{\eta_s} = 0,3886 \text{ l}$$

## SÈRIE 1

### Primera part

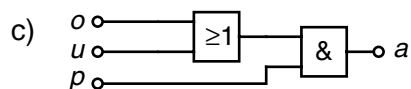
#### Exercici 1

Q1 c      Q2 c      Q3 a      Q4 a      Q5 a

#### Exercici 2

	<i>o</i>	<i>p</i>	<i>u</i>	<i>a</i>
	0	0	0	0
	0	0	1	0
	0	1	0	0
a)	0	1	1	1
	1	0	0	0
	1	0	1	0
	1	1	0	1
	1	1	1	1

$$b) \quad a = o \cdot p + \bar{o} \cdot p \cdot u = (o + u) \cdot p$$



### Segona part

#### OPCIÓ A

#### Exercici 3

$$a) \quad \Gamma_s = \frac{P}{\omega} = 1,139 \text{ N}\cdot\text{m}$$

$$b) \quad \eta = \frac{P_s}{P_e} = \frac{P_s}{U \cdot I} = 0,7094$$

$$c) \quad E_{\text{elèc}} = P_{\text{elèc}} \cdot t = U \cdot I \cdot t = 78,66 \text{ kJ} \quad E_{\text{dis}} = E_{\text{elèc}} (1 - \eta) = 22,86 \text{ kJ}$$

#### Exercici 4

$$a) \quad m = \rho_{\text{coure}} \cdot \frac{1}{2} \cdot L \cdot b \cdot e = 19,22 \text{ kg}$$

$$b) \quad \sum M(O) = 0 \quad \rightarrow \quad mg \frac{L}{3} - TL = 0 \quad \rightarrow \quad T = 62,84 \text{ N}$$

$$c) \sum F = 0 \rightarrow F_v + T - mg = 0 \rightarrow F_v = 125,7 \text{ N}$$

$$F_h = 0$$

$$d) \sigma = \frac{T}{S} = 20,95 \text{ MPa}$$

### OPCIÓ B

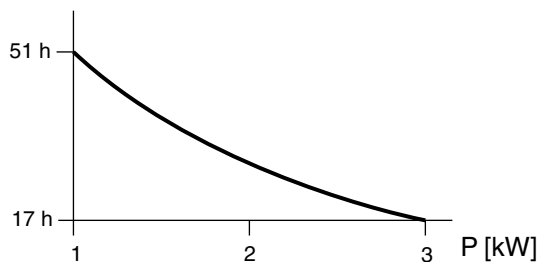
#### Exercici 3

$$a) c = \frac{P_{\max}}{c_q \cdot \rho} = 81,52 \cdot 10^{-6} \text{ l/s}$$

$$b) V = c \cdot t_a = 4,989 \text{ l}$$

$$c) P = \rho \cdot c_q \cdot \frac{V}{t} = P_{\max} \frac{t_a}{t_b} = 1,417 \text{ kW}$$

d) autonomia [h]



#### Exercici 4

$$a) U = 3 \cdot U_{\text{led}} = 10,8 \text{ V} \quad I = 8 \cdot I_{\text{led}} = 160 \text{ mA}$$

$$b) E_{\text{led}} = U_{\text{led}} \cdot I_{\text{led}} \cdot t = 2,074 \text{ kJ} = 0,576 \text{ W} \cdot \text{h}$$

$$E_{\text{total}} = 24 \cdot E_{\text{led}} = 49,77 \text{ kJ} = 13,82 \text{ W} \cdot \text{h}$$

$$c) t_b = \frac{C_{\text{pila}}}{I} = 11,25 \text{ h}$$