

## SÈRIE 1

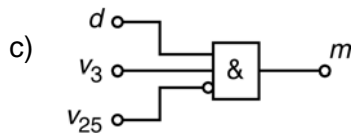
## Primera part

## Exercici 1

Q1 d    Q2 a    Q3 a    Q4 d    Q5 b

## Exercici 2

$d$	$v_3$	$v_{25}$	$m$
0	0	0	0
0	0	1	X ← No és possible
0	1	0	0
a) 0	1	1	0
1	0	0	0
1	0	1	X ← No és possible
1	1	0	1
1	1	1	0

b) Amb  $X = 0$      $m = d \cdot v_3 \cdot \bar{v}_{25}$ 

## Segona part

## OPCIÓ A

## Exercici 3

a)  $L_A = 2r + \pi r = 3085 \text{ mm}$

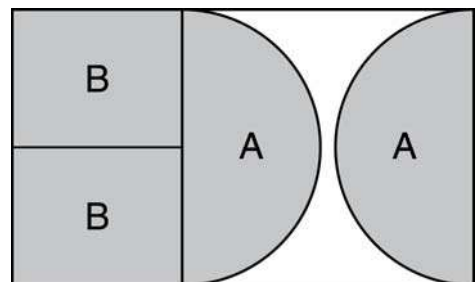
$L_B = 2r + 2b = 2700 \text{ mm}$

b)  $t_{\text{total}} = \frac{2r + b + 2\pi r}{v} = 1,144 \text{ min} = 68,64 \text{ s} \rightarrow$

c)  $m = \rho(2e S_A + 2e S_B) = 2e\rho\left(\frac{\pi r^2}{2} + rb\right) = 30,46 \text{ kg}$

d) Taula plegada  $\rightarrow \frac{2\pi r}{0,85 \text{ m}} = 4,435 \rightarrow 4 \text{ persones}$

Taula desplegada  $\rightarrow \frac{2\pi r + 2b}{0,85 \text{ m}} = 6,200 \rightarrow 6 \text{ persones}$



**Exercici 4**

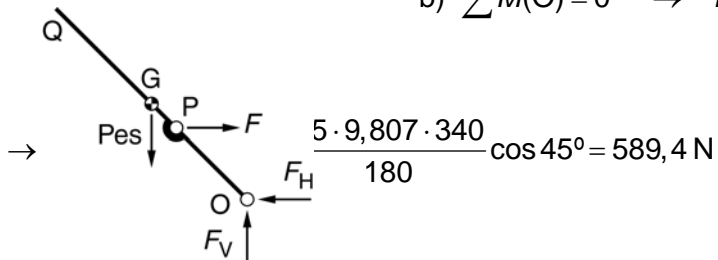
- a)  $P = \frac{U^2}{R} \rightarrow R = \frac{U^2}{P} = 10,29 \Omega$
- b) En un cicle:  $P_1 = \frac{E_{\text{cicle}}}{t_{\text{cicle}}} = \frac{P t_{\text{on}}}{(t_{\text{on}} + t_{\text{off}})} = 7,099 \text{ W}$
- c)  $f = \frac{1}{(t_{\text{on}} + t_{\text{off}})} = \frac{1}{(0,36 + 0,35) \cdot 10^{-3}} = 1408 \text{ Hz}$
- d)  $P_2 = \frac{P t_{\text{on}}}{(t_{\text{on}} + t_{\text{off}})} \rightarrow t_{\text{off}} = \frac{P t_{\text{on}}}{P_2} - t_{\text{on}} = 0,09 \text{ ms}$

**OPCIÓ B****Exercici 3**

- a)  $E_d = \frac{E_{\text{dia}}/2}{\eta} = 1,333 \text{ kWh} = 4,800 \text{ MJ}$
- b)  $E_d = \rho V g h \rightarrow V = \frac{E_d}{\rho g h} = 34,96 \text{ m}^3$
- c)  $P_h = q \rho g h$
- $P_{\text{elèct.}} = P_h \eta = q \rho g h \eta = 617,8 \text{ W}$

**Exercici 4**

- a)  $\sum M(O) = 0 \rightarrow mgL \cos \varphi - Fh = 0$



$$\frac{5 \cdot 9,807 \cdot 340}{180} \cos 45^\circ = 589,4 \text{ N}$$

$$F_V - mg = 0 \rightarrow F_V = mg = 441,3 \text{ N}$$

$$F - F_H = 0 \rightarrow F_H = F = 589,4 \text{ N}$$

- c)  $|OP| = \frac{h}{\sin 45^\circ}$

Per  $\varphi = 0^\circ$   $\tan \beta = \frac{h}{(b + |OP|)} \rightarrow \beta = \text{atan} \left( \frac{h}{(b + h/\sin 45^\circ)} \right) = 16,45^\circ$

Per  $\varphi = 90^\circ$   $\tan \beta = \frac{b}{(|OP| - h)} \rightarrow \beta = \text{atan} \left( \frac{b}{(h/\sin 45^\circ - h)} \right) = 78,14^\circ$