

SÈRIE 1

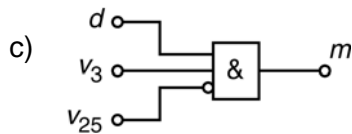
Primera part

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

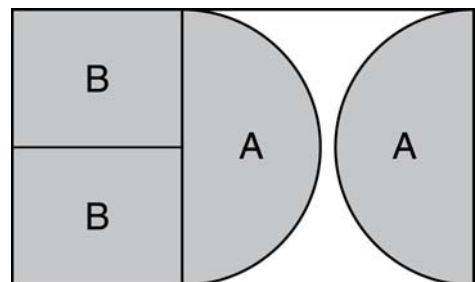
$L_B = 2r + 2b = 2700 \text{ mm}$

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

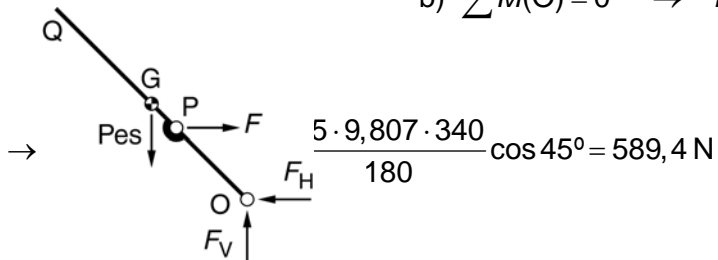
- a) $P = \frac{U^2}{R} \rightarrow R = \frac{U^2}{P} = 10,29 \Omega$
- b) En un cicle: $P_1 = \frac{E_{\text{cicle}}}{t_{\text{cicle}}} = \frac{P t_{\text{on}}}{(t_{\text{on}} + t_{\text{off}})} = 7,099 \text{ W}$
- c) $f = \frac{1}{(t_{\text{on}} + t_{\text{off}})} = \frac{1}{(0,36 + 0,35) \cdot 10^{-3}}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



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

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

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