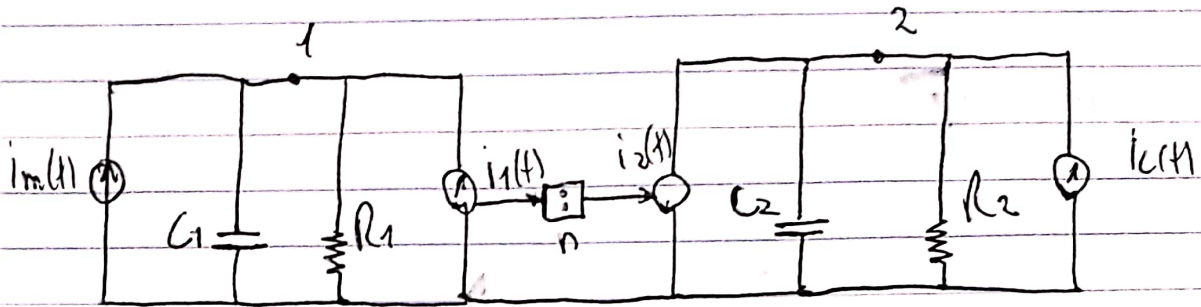


Exercício 18/09  
 JOÃO OTÁVIO TANAKA DE OLIVEIRA

10772842

1a)



Nó 1:

$$V_1 \left( \frac{1}{R_1} + C_1 D \right) = i_m - i_1$$

Nó 2:

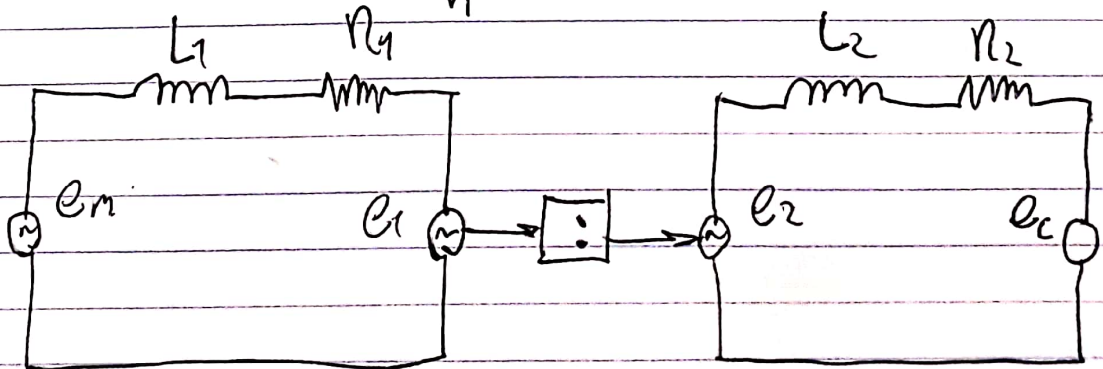
$$V_2 \left( \frac{1}{R_2} + C_2 D \right) = i_2 - i_c$$

$$i_2 = n i_1$$

$$\therefore \begin{cases} J_1 \ddot{\theta}_1 + \theta_1 \dot{\theta}_1 = T_m - T_1 \\ J_2 \ddot{\theta}_2 + \theta_2 \dot{\theta}_2 = T_2 - T_c \end{cases}$$

$$T_2 = n T_1 \Rightarrow \dot{\theta}_2 = \frac{\dot{\theta}_1}{n}$$

b)



$$e_m(t) = e_1 + (R_1 + L_1 D) i_1$$

$$e_2(t) = e_c + (R_2 + L_2 D) i_2$$

$$e_2(t) = n e_c(t)$$

$$\therefore \begin{cases} J_1 \ddot{\theta}_1 + B_1 \dot{\theta}_1 = T_m - T_1 \\ J_2 \ddot{\theta}_2 + B_2 \dot{\theta}_2 = T_2 - T_c \end{cases}$$

Mesmo sistema que de (A).