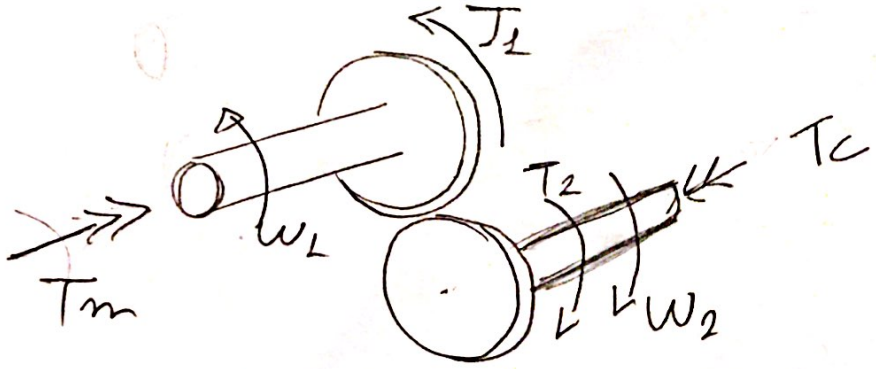
José Felipe Feliz Refud - 10333139

PME 3380 - Exercícios do dia 15/09.

1º Exercício



$$\left.\begin{aligned} &\cdot J_1 \dot{\omega}_1 + B_1 \omega_1 + T_1 = T_m \\ &\cdot J_2 \dot{\omega}_2 + B_2 \omega_2 + T_c = T_2 \end{aligned}\right\}$$

↳ $\underline{T_2 = n T_1}$

$$J_2\dot{\omega}_2 + B_2\omega_2 + T_c = n \cdot T_1 = n\left(T_m - J_1\dot{\omega}_1 - B_1\omega_1\right)$$

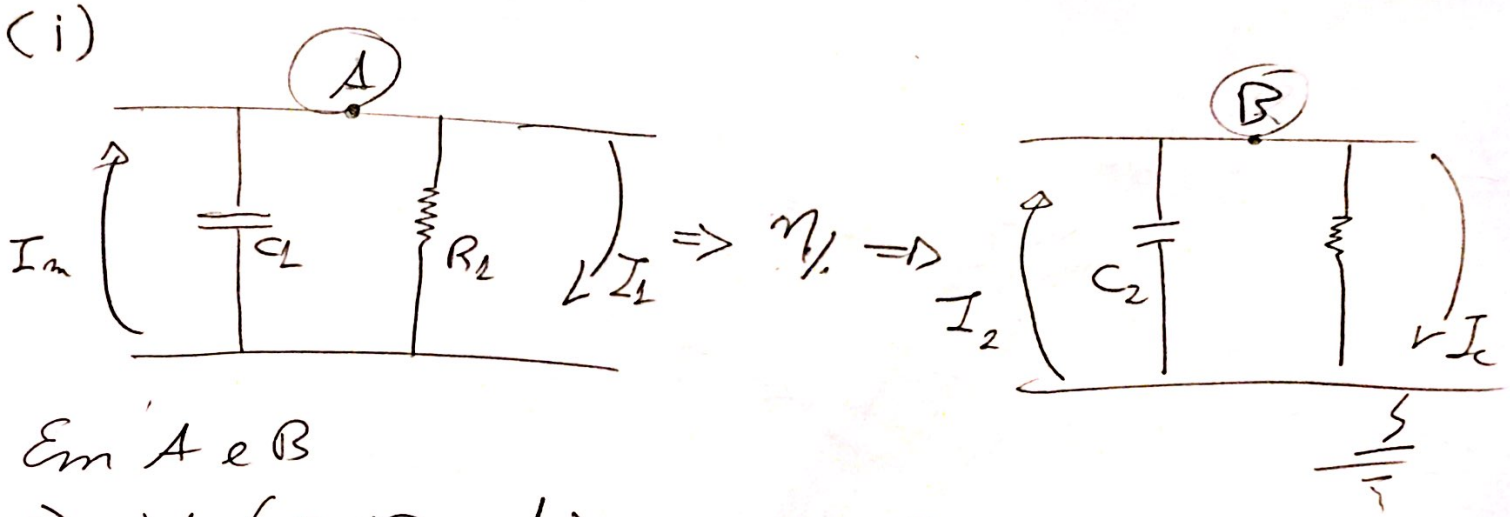
$$J_2\dot{\omega}_2 + B_2\omega_2 + T_c = n\left(T_m - J_1\dot{\omega}_1 - B_1\omega_1\right)$$

por fim

$$\boxed{\left(J_2 + n^2 J_1\right)\dot{\omega}_2 + \left(B_2 + n^2 B_1\right)\omega_2 + T_c = n\,T_m}$$ //

- Analogia do Tipo 2

(i)



Em A e B

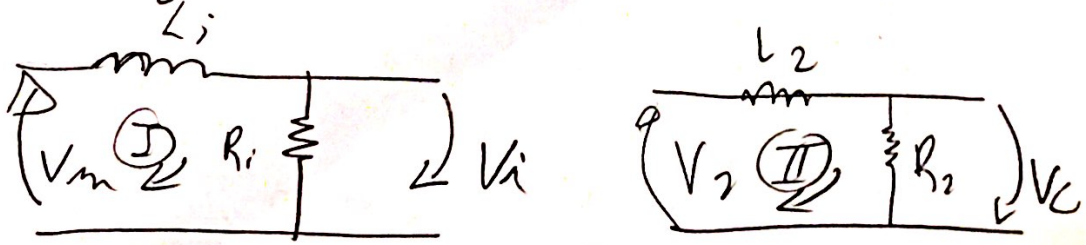
A) $V_1 \cdot \left(C_2 D + \frac{1}{R_1}\right) = i_m - i_1$

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

$$J_1 \cdot \dot{\omega}_1 + B_1 \omega_1 = T_m - T_L$$

$$J_2 \dot{\omega}_2 + B_2 \omega_2 = T_2 - T_c$$

Analogia do Tipo 1



I: $V_m - V_1 = L_1 \cdot D i_1 + R_1 \cdot i_1$

II $V_2 - V_c = L_2 D \cdot i_2 + R_2 \cdot i_2$

$$J_1 \cdot \dot{\omega}_1 + B_1 \cdot \omega_1 = T_m - T_L$$

$$J_2 \cdot \dot{\omega}_2 + B_2 \cdot \omega_2 = V_2 - V_c$$

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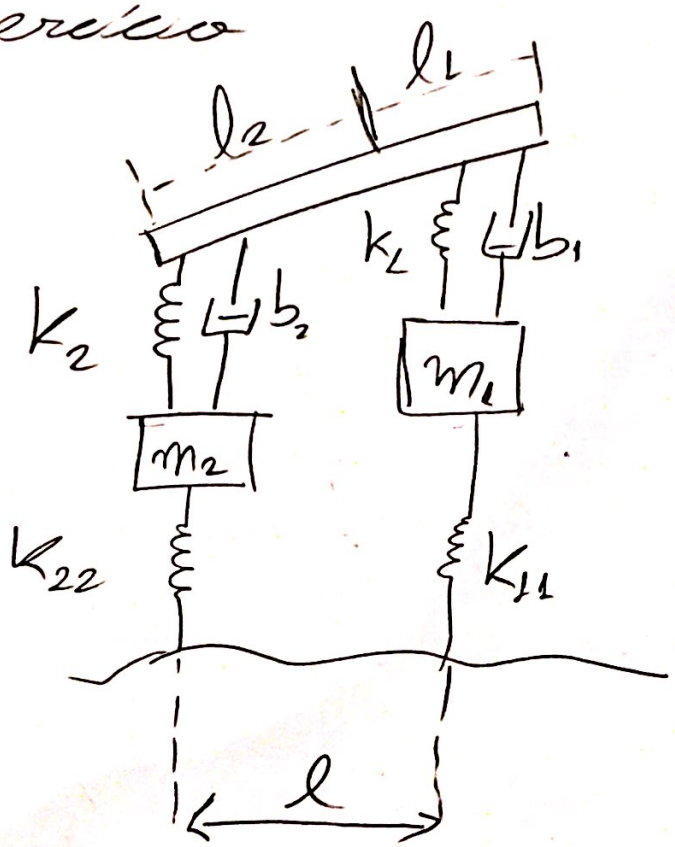
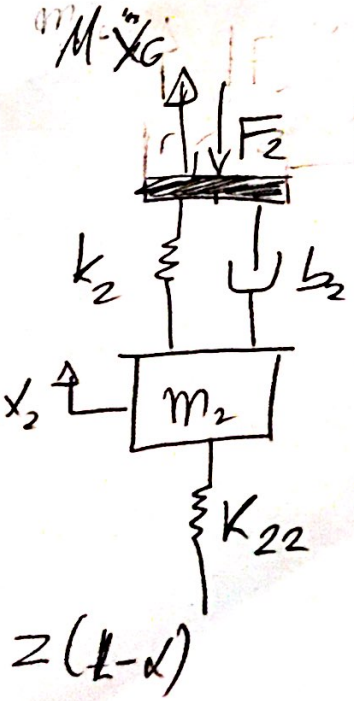
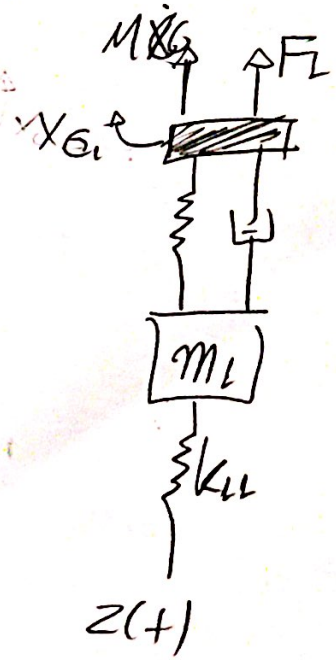
2º Exercício



. Divida a figura ao lado em 2 sistemas, da esquerda com m_2 e o da direita completo

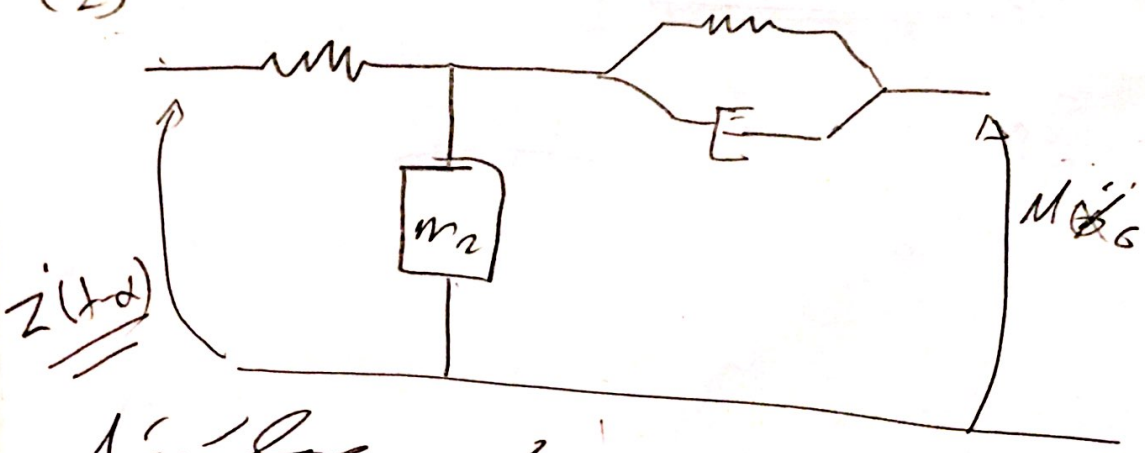




$F_2 \cdot l_2 = F_1 \cdot l_1$

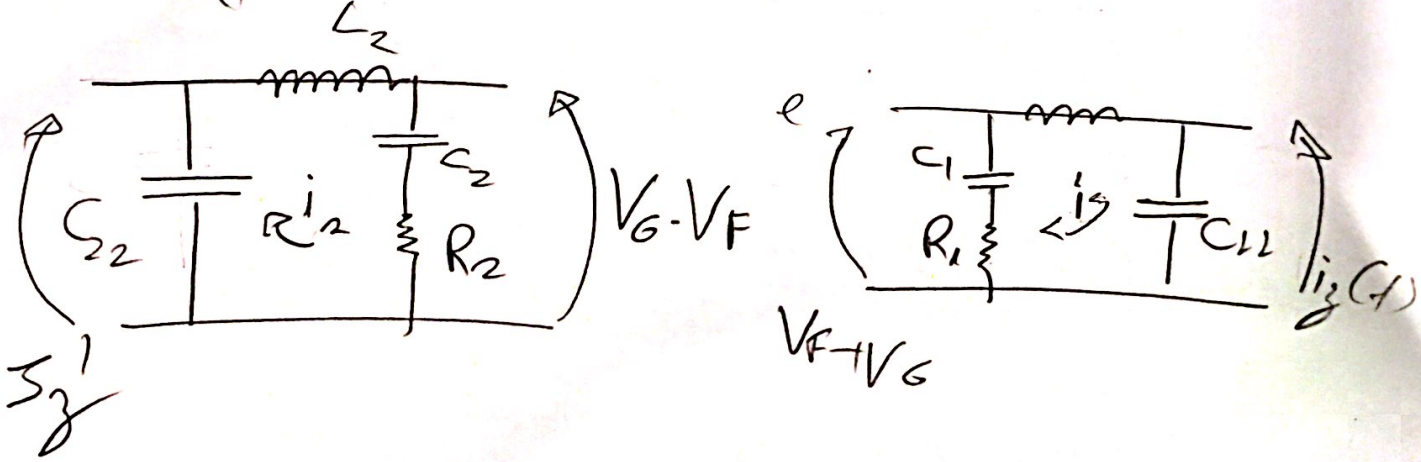
$\eta = \frac{F_1}{F_2}$

(1)



Análogo p/ m_1

Dessa forma



$$\textcircled{1}\quad V_{F_1} + V_G = i_1\left(L_1 D + R_1 + \frac{1}{C_1 D} + \frac{1}{C_{12} D}\right) - i_2\left(\frac{1}{C_{12} D}\right)$$

$$\textcircled{2}\quad V_G - V_{F_2} = i_2\left(L_2 D + R_2 + \frac{1}{C_2 D} + \frac{1}{C_2 D}\right) - \dot{z}(1-\alpha)\cdot\left(\frac{1}{C_2 D}\right)$$

$$F_1 + M\ddot{x}_G = m_1\ddot{x}_1 + b_1\dot{x}_1 + K_1 x_1 + K_{11} x_1 - K_{12} z(1)$$

$$M\ddot{x}_G - F_2 = m_2\ddot{x}_2 + b_2\dot{x}_2 + K_2 x_2 + K_{22} x_2 - K_{21}\cdot z(1-\alpha)$$