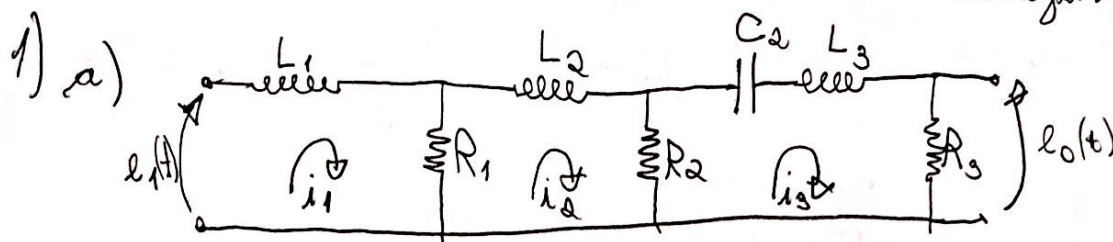
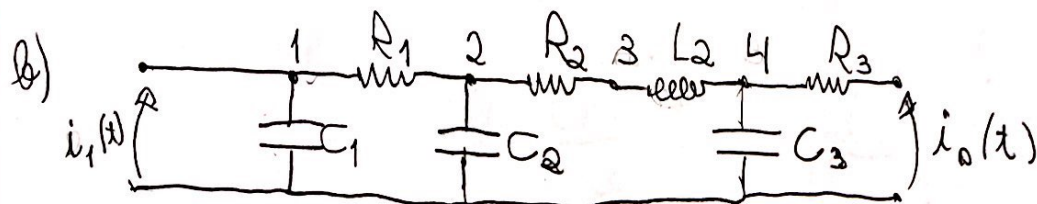


Exercícios 22/09/20



Analogia tipo 1

$C_p \rightarrow i$
 $Q(t) \rightarrow e(t)$
 $\frac{1}{R_f} \rightarrow R$
 $\frac{1}{L_f} \rightarrow \frac{1}{C}$



Analogia tipo 2

c) Analogia tipo 1:

(1): $e_1(t) = (R_1 + L_1 \cdot D) i_1 - R_1 \cdot i_2$

(2): $0 = (R_1 + L_2 \cdot D + R_2) i_2 - R_1 \cdot i_1 - R_2 \cdot i_3$

(3): $e_0(t) = (R_2 + \frac{1}{C_2} D + L_3 \cdot D + R_3) i_3 - R_2 \cdot i_2$

(1) $\Rightarrow Q_1(t) = \dot{h}_1 \cdot A + \frac{1}{R_{f1}} \cdot (\dot{h}_1 - \dot{h}_2)$

(2) $\Rightarrow 0 = \dot{h}_2 \cdot A + \frac{1}{R_{f1}} (\dot{h}_2 - \dot{h}_1) + \frac{1}{R_{f2}} (\dot{h}_2 - \dot{h}_3)$

(3) $\Rightarrow Q_0(t) = \dot{h}_3 \cdot A + \frac{1}{R_{f2}} (\dot{h}_3 - \dot{h}_2) + Q_0(t) + \frac{1}{R_{f3}} (\dot{h}_3)$

$i \rightarrow C_p = \frac{A}{D \cdot g}$

$R \rightarrow \frac{1}{R_f} = \rho \cdot g \cdot R_f$

$C \rightarrow L_f = \frac{\rho \cdot l}{A}$

Analogia tipo 2:

(1) $i_1(t) = (C_1 \cdot D + \frac{1}{R_1}) V_1 - (\frac{1}{R_1}) V_2$

(2) $0 = (\frac{1}{R_1} + C_2 \cdot D + \frac{1}{R_2}) \cdot V_2 - \frac{1}{R_1} \cdot V_1 - \frac{1}{R_2} \cdot V_3$

(3) $0 = (\frac{1}{R_2} + \frac{1}{L_3 \cdot D}) \cdot V_3 - \frac{1}{R_2} \cdot V_2 - \frac{1}{L_3 \cdot D} \cdot V_4$

$$(4) \left(\frac{1}{L_2 D} + C_3 D + \frac{1}{R_3} \right) V_4 - \frac{1}{L_2 D} V_3 = 0$$

Analogya Tipi 2: $V \rightarrow P = \rho \cdot g \cdot h$ $R \rightarrow \bar{R}_p = \rho \cdot g \cdot R_p$

$$i \rightarrow Q$$

$$L \rightarrow L_p = \frac{\rho \cdot L}{\mu g}$$

$$C \rightarrow C_p = \frac{A}{\rho \cdot g}$$

$$\Rightarrow Q_1(t) = A_1 \cdot \ddot{h}_1 + \frac{(h_1 - h_2)}{R_{p1}} \quad (1)$$

$$\Rightarrow 0 = A_2 \ddot{h}_2 + \frac{(h_2 - h_1)}{R_{p1}} + \frac{(h_2 - h_3)}{R_{p2}} \quad (2)$$

$$\Rightarrow 0 = \frac{(h_4 - h_3)}{L_{f2}} + \frac{(h_3 - h_2)}{R_{p2}} \quad (3)$$

$$\Rightarrow 0 = \frac{(h_4 - h_3)}{L_{f2}} + A_3 \ddot{h}_4 + \frac{h_4}{R_{p3}} \quad (4)$$