

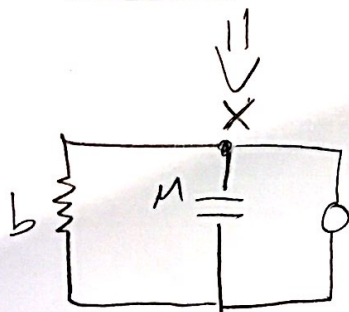
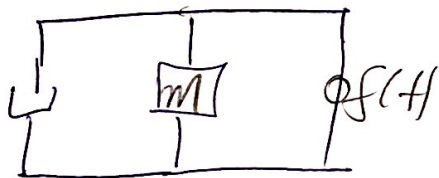
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Exercícios de controle do curso de 10.



onde  $f(t) = l \cdot B_i$

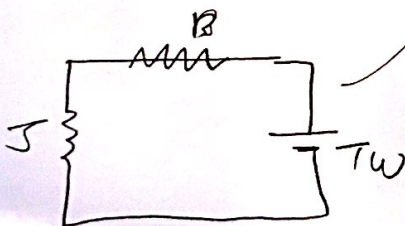
(i) circuito análogo utilizando o análogo do tipo 2



$\bullet X: Fw = V(b + M D)$

$M \ddot{x} + b \dot{x} = l B_i$

②



$(B + J D) \omega = T = K_i(t)$

$J \ddot{\theta} + B \dot{\theta} = K_i$

Também é possível fazer por Lagrange

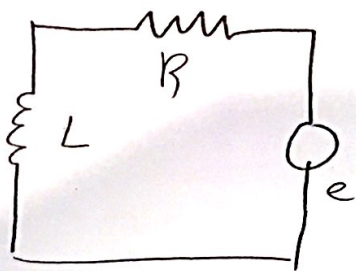
$$T = \frac{J\omega^2}{2} + \frac{L_0 i^2}{2} = \frac{J\dot{\theta}^2}{2} + \frac{L_0 \dot{q}^2}{2}$$

$$Q = \frac{\partial L}{\partial \dot{\theta}} = J\dot{\theta} \text{ onde } \frac{d}{dt} \left( \frac{\partial L}{\partial \dot{\theta}} \right) = J\ddot{\theta}, \quad \frac{\partial L}{\partial \theta} = 0,$$

$$\frac{\partial R}{\partial \dot{\theta}} = B\dot{\theta}, \quad \tau(t) = k\dot{q}$$

$$J\ddot{\theta} + B\dot{\theta} = \tau(t) \Rightarrow \boxed{J\ddot{\theta} + B\dot{\theta} = k\dot{q}}$$

b)



$$T = \frac{J\dot{\theta}^2}{2} + \frac{L_0 \dot{q}^2}{2}$$

$$V = 0; \quad R = \frac{B \cdot \dot{\theta}^2}{2} + \frac{R \cdot q^2}{2}$$

$$T = k_i = k\dot{q}$$

$$Q = J\dot{\theta}, \quad \frac{\partial R}{\partial \dot{\theta}} = B\dot{\theta}; \quad \frac{\partial L}{\partial \dot{\theta}} = 0 \Rightarrow J\ddot{\theta} + B\dot{\theta} = k\dot{q}$$

$$q_p = L\ddot{q}; \quad \frac{\partial R}{\partial \dot{q}} = R\dot{q}; \quad \frac{\partial L}{\partial \dot{q}} = 0$$

$$\underline{L\ddot{q} + R\dot{q} = e}$$