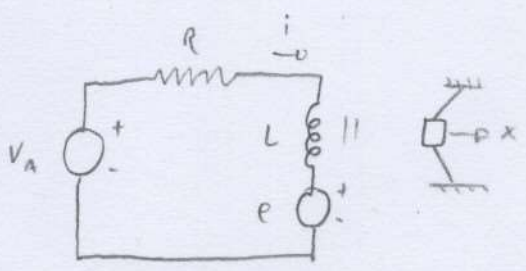


Modelagem de sistemas mecânicos - Ex aula (10/09)

1)



$$T = \frac{m \dot{x}^2}{2}$$

$$N = \frac{b \dot{x}^2}{2} + \frac{R \dot{q}^2}{2}$$

$$V = \frac{L q^2}{2}$$

$$F = l B \dot{q}$$

$$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = m \ddot{x}$$

$$-\frac{\partial L}{\partial x} = 0$$

$$\frac{\partial N}{\partial \dot{x}} = b \dot{x}$$

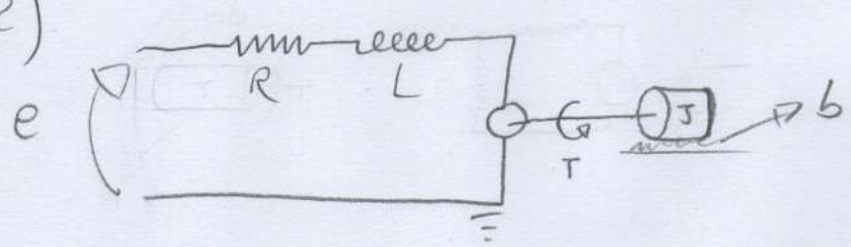
$$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{q}} \right) = 0$$

$$-\frac{\partial L}{\partial q} = L q$$

$$\frac{\partial N}{\partial \dot{q}} = R \dot{q}$$

$$\begin{cases} m \ddot{x} + b \dot{x} = l B \dot{q} \\ R \dot{q} + L q = l B \dot{x} \end{cases}$$

2)



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

$$V = \frac{L q^2}{2}$$

$$N = \frac{b \dot{\theta}^2}{2} + \frac{R \dot{q}^2}{2}$$

$$\begin{cases} J \ddot{\theta} + b \dot{\theta} = T \\ R \dot{q} + L q = e \end{cases}$$