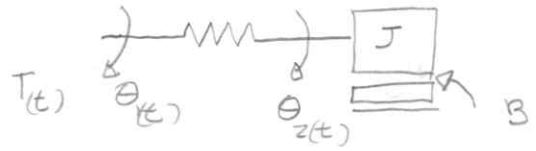
3a)



input T

output θ_2

?

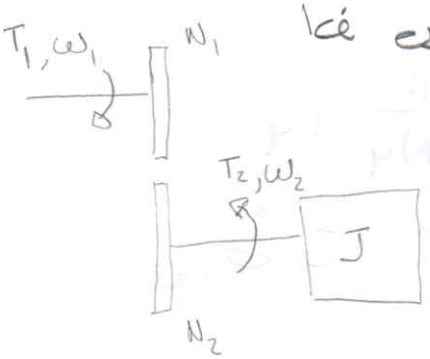
$$\sum T_{(t)} = J\ddot{\theta}_{(t)}$$

$$\theta_1: \{ T_{(t)} = -K(\theta_1 - \theta_2)$$
$$\theta_2: \{ J\ddot{\theta}_2 = -K(\theta_2 - \theta_1) - B\dot{\theta}_2$$

$$T_{(t)} - K(\theta_{1(t)} - \theta_{2(t)}) - B(\dot{\theta}_{2t}) = J\alpha$$

NOTA: só quando $t_{(t)} > K(\theta_{1(t)} - \theta_{2(t)}) + B\dot{\theta}_{2(t)}$ é que J se começa a mover, cá está em repouso.

4a)



$$\sum T = J\alpha$$

$$T_2 = \frac{N_2}{N_1} T_1$$

$$\omega_2 = \frac{N_1}{N_2} \omega_1$$

$$\sum T_{(t)} = J\ddot{\theta}_{(t)}$$

$$T_1 = \frac{N_1}{N_2} \cdot T_2 \qquad T_2 = J\ddot{\theta}_{2(t)}$$

$$= \frac{N_1}{N_2} J\ddot{\theta}_{2(t)}$$