

CORRIGE CENTRIFUGEUSE_A1_DR1

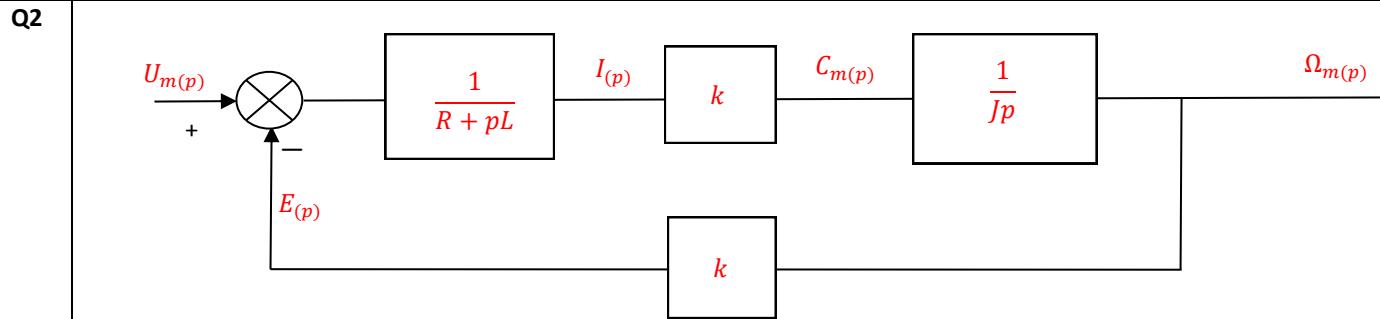
Q1

$$E(p) = R.I(p) + p.L.I(p)$$

$$C_{em} = k.I$$

$$E = k.\Omega$$

$$\Omega(p).(J.p) = C_{em}(p) - C_r(p)$$



Q3

$$\Omega_{m(p)} = \frac{1}{Jp} \cdot (C_{m(p)}) = \frac{1}{Jp} \cdot k \cdot \frac{1}{R + pL} \cdot (U_{m(p)} - E_{(p)}) = \frac{k}{Jp \cdot (R + pL)} \cdot (U_{m(p)} - k \cdot \Omega_{m(p)})$$

$$\Omega_{m(p)} \cdot \left(1 + \frac{k \cdot k}{Jp \cdot (R + pL)} \right) = \frac{k}{Jp \cdot (R + pL)} \cdot U_{m(p)}$$

$$\Omega_{m(p)} \cdot (Jp \cdot (R + pL) + k^2) = k \cdot U_{m(p)}$$

$$H_{m(p)} = \frac{\Omega_{m(p)}}{U_{m(p)}} = \frac{k}{Jp \cdot (R + pL) + k^2}$$

$$H_{m(p)} = \frac{k}{RJp + Ljp^2 + k^2} = \frac{k}{k^2 + RJp + Ljp^2}$$

$$H_{m(p)} = \frac{\frac{k}{k^2}}{1 + \frac{RJ}{k^2}p + \frac{LJ}{k^2}p^2}$$

Fonction de transfert du 2nd ordre.

Le modèle proposé est d'ordre 1, il faut négliger le terme p^2

$$H_{m(p)} = \frac{1}{1 + \frac{RJ}{k^2}p + \frac{LJ}{k^2}p^2} = \frac{\frac{1}{k^2}}{1 + \frac{RJ}{k^2}p}$$

$$H_o = \frac{1}{k} \quad \tau_{em} = \frac{RJ}{k^2}$$

Q4

$H_o = \frac{1}{k} = \frac{1}{0,149} = 6,71 \text{ rad. s}^{-1}.V^{-1}$	$\tau_{em} = \frac{RJ}{k^2} = \frac{2,47.13,7e-5}{0,149.0,149} = 15ms$
---	--

Q5

Q6

Q7

Q8