Travaux Dirigés 5

Modélisation des SLCI

Exercice 1 : Calcul de fonction de transfert

a. $\frac{K(p)*G(p)}{1+K(p)*G(p)*F(p)}$

b. $\frac{K(p)*G(p)}{1+K(p)*G(p)*F(p)}$

c. $\frac{\frac{2}{p*(1+2*p+p^2)}}{1+\frac{6*p}{3*p*(1+2*p+p^2)(1+2*p)}}$

d. $\frac{(A(p)+B(p))*C(p)*\frac{D(p)}{1+D(p)}*F(p)}{1+(A(p)+B(p))*C(p)*\frac{D(p)}{1+D(p)}*F(p)*G(p)}$

Exercice 2 : Cablecam de Hymatom

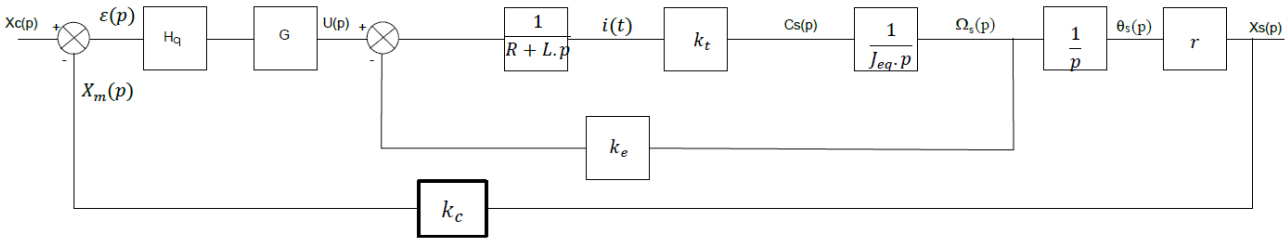


Figure 2 : *schéma blocs du Cablecam*

Question 1 : $H_m(p) = \frac{\frac{k_t}{(R+L*p)*J*p}}{1+\frac{k_t*k_e}{(R+L*p)*J*p}} = \frac{k_t}{(R+L*p)*J*p+k_t*k_e}$

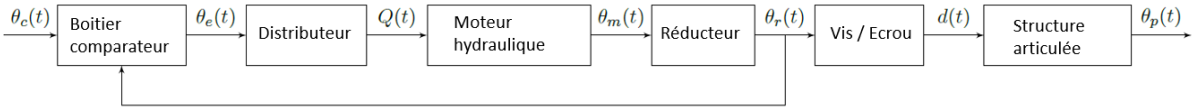
Question 2 : $FTBO(p) = H_q * G * \frac{k_t}{(R+L*p)*J*p+k_t*k_e} * \frac{1}{p} * r * k_c$

Question 3 : $FTBF(p) = \frac{H_q*G*\frac{k_t}{(R+L*p)*J*p+k_t*k_e}*\frac{1}{p}*r}{1+H_q*G*\frac{k_t}{(R+L*p)*J*p+k_t*k_e}*\frac{1}{p}*r*k_c}$

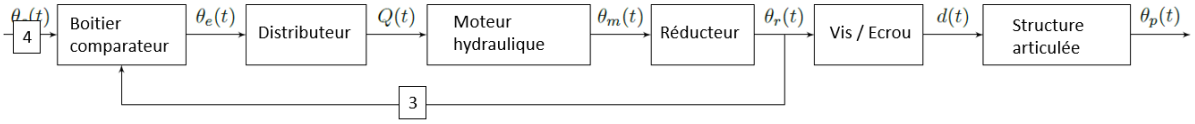
Question 4 : $FTBF(p) = \frac{H_q*G*k_t*r}{p(L*J*p^2+J*R*p+k_t*k_e)+H_q*G*k_t*r*k_c}$

Exercice 3 : Commande d'un plan horizontal réglable d'empennage d'avion

Question 1 :



Question 2 :



Question 3 : D2 ou D3 OK