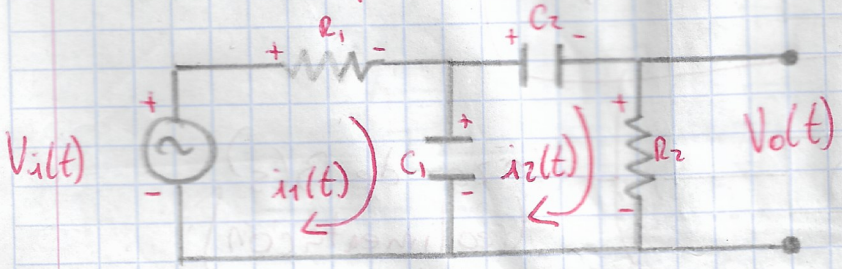
Tarea Instrumentación

F.T. del filtro pasa banda con D.B.



$$V_i(t) = R_1 i(t) + \frac{1}{C_1}\int i_1(t)dt - \frac{1}{C_1}\int i_2(t)dt$$

$$\emptyset = \frac{1}{C_1}\int i_2(t)dt - \frac{1}{C_1}\int i_1(t)dt + \frac{1}{C_2}\int i_2(t)dt + R_2 i_2(t)$$

$$V_o(t) = R_2 i_2(t)$$

$$V_i(s) = R_1 I_1(s) + \frac{1}{sC_1} I_1(s) - \frac{1}{sC_1} I_2(s)$$

$$\emptyset = \frac{1}{sC_1} I_2(s) - \frac{1}{sC_1} I_1(s) + \frac{1}{sC_2} I_2(s) + R_2 I_2(s)$$

V.S $V_o(s) = R_2 I_2(s)$ V.E

F.T

$$\emptyset = I_2(s)\left(\frac{1}{sC_1} + \frac{1}{sC_2} + R_2\right) - \frac{1}{sC_1} I_1(s)$$

V.S $I_1(s) = I_2(s)\left(\frac{C_2 + C_1 + sC_1C_2R_2}{C_2}\right)$ V.E F.T

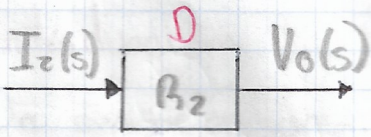
$$V_i(s) = I_1(s)\left(R_1 + \frac{1}{sC_1}\right) - \frac{1}{sC_1} I_2(s)$$

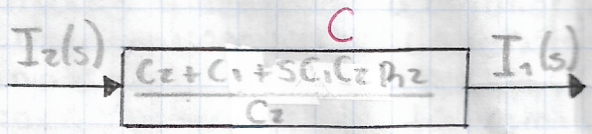
$$I_2(s) = I_1(s)\left(R_1 + \frac{1}{sC_1}\right) - V_i(s)$$

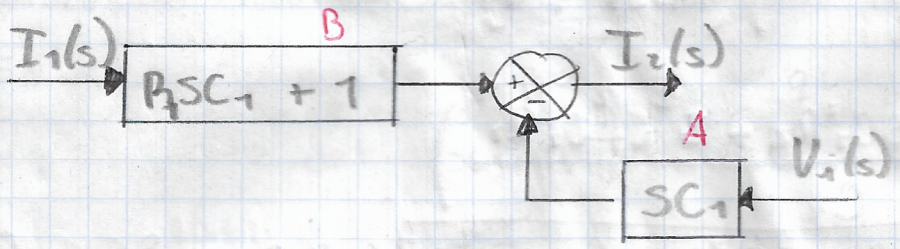
$$I_2(s) = \left(I_1(s)\left(R_1 + \frac{1}{sC_1}\right) - V_i(s)\right) sC_1$$

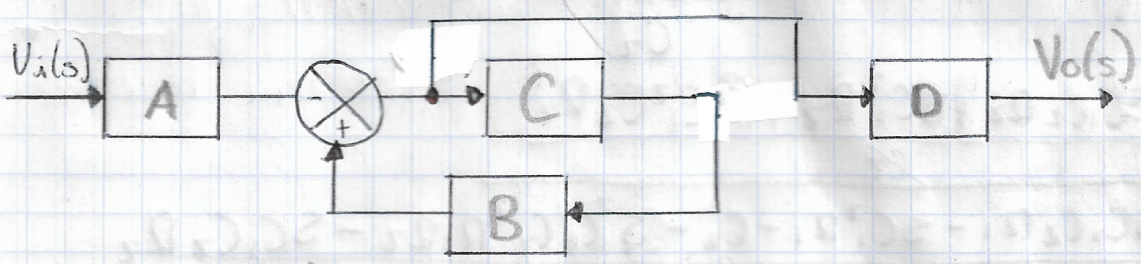
V.S $I_2(s) = I_1(s)(RsC_1 + 1) - V_i(s)sC_1$

V.E F.T V.E F.T

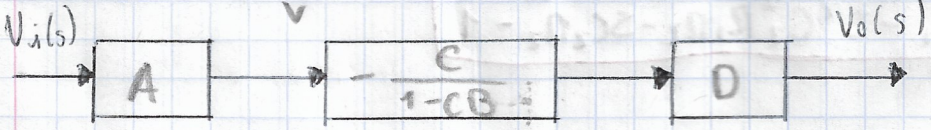


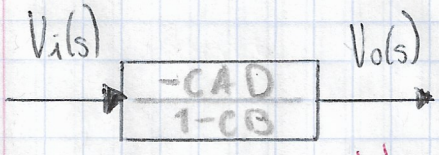






$$\frac{C(s)}{R(s)} = \frac{-G(s)}{1 - G(s)H(s)}$$





$G(s)$ total

$$\frac{-CAD}{1-CB}$$

$$= -\frac{\left(\frac{C_2+C_1+SC_1C_2R_2}{C_2}\right)(SC_1)(R_2)}{1-\left(\frac{C_2+C_1+SC_1C_2R_2}{C_2}\right)(R_2SC_1+1)}$$

$$= -\frac{\left(\frac{SC_1C_2R_2+SC_1^2R_2+S^2C_1^2C_2R_2^2}{C_2}\right)}{1-\left(\frac{SC_1C_2R_1+C_2+SC_1^2R_1+C_1+S^2C_1^2C_2R_1R_2+SC_1C_2R_2}{C_2}\right)}$$

$$= \frac{\frac{SC_1C_2R_2+SC_1^2R_2+S^2C_1^2C_2R_2^2}{C_2}}{\frac{SC_1C_2R_1-SC_1^2R_1-C_1-S^2C_1C_2^2R_1R_2-SC_1C_2R_2}{C_2}}$$

$$= \frac{SC_2R_2+SC_1R_2+S^2C_1C_2R_2^2}{SC_2R_1-SC_1R_1-S^2C_2^2R_1R_2-SC_2R_2-1}$$ — F.T.

Orden = segundo
Exactitud = dos
No. polos = dos
No. ceros = dos