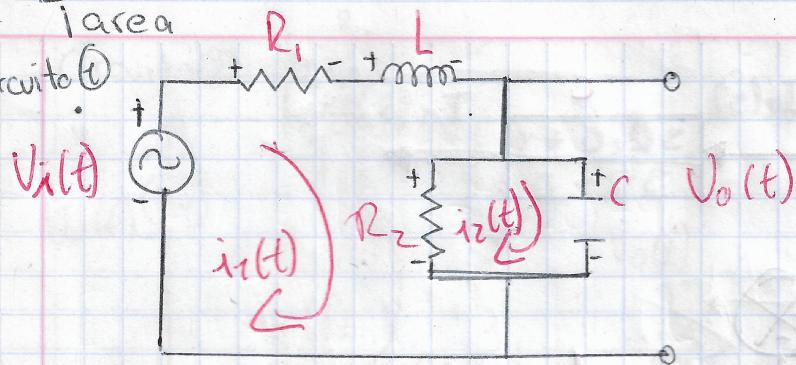


Tarea

Circuito ①



$$V_{il}(t) = R_1 i_1(t) + L \frac{di_1(t)}{dt} + R_2 i_1(t) - R_2 i_2(t)$$

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

$$V_o(t) = \frac{1}{C} \int i_2(t) dt$$

$$V_{il}(s) = R_1 I_1(s) + sL I_1(s) + R_2 I_1(s) - R_2 I_2(s)$$

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

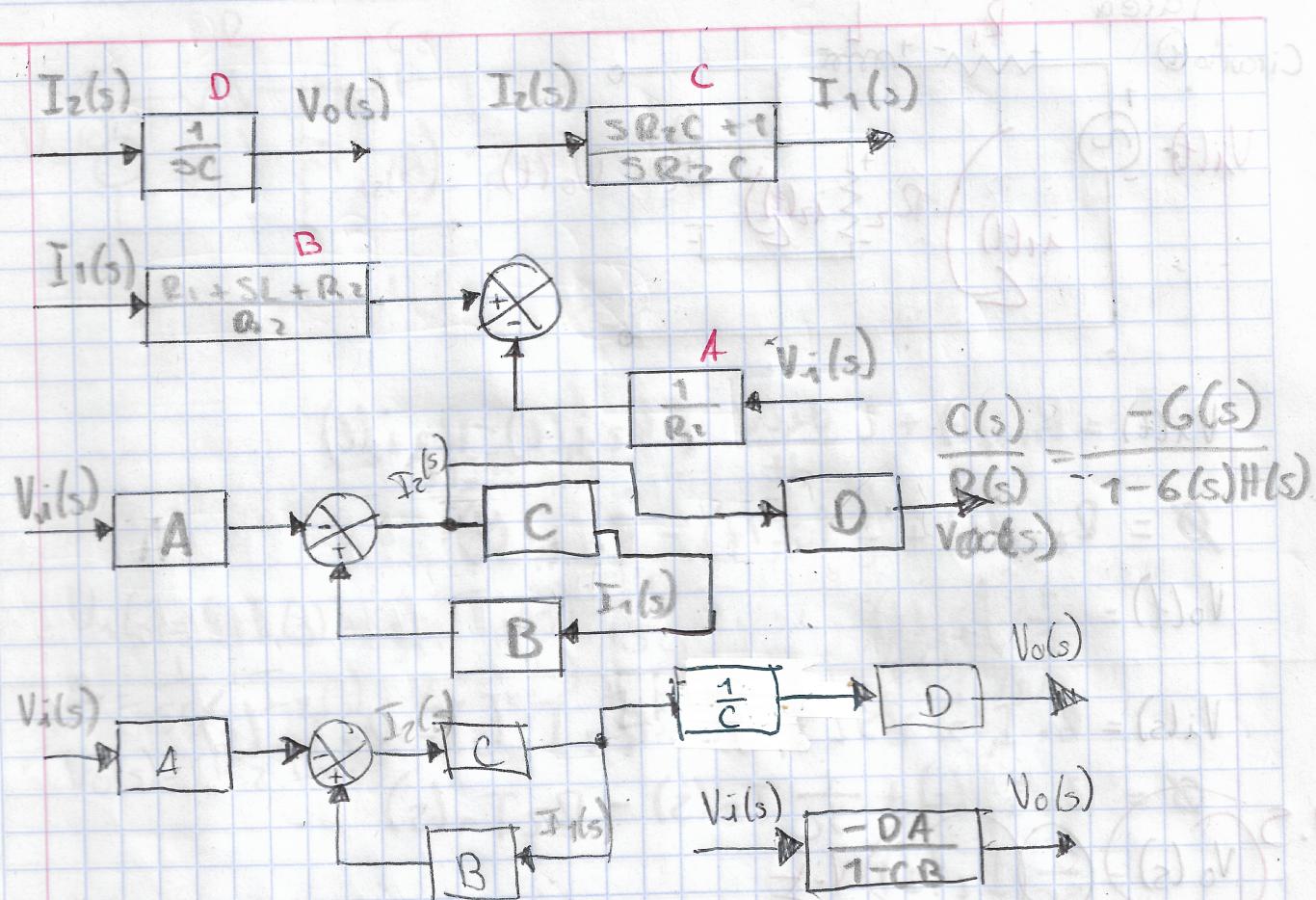
V.S $V_o(s) = \frac{1}{sC} I_2(s)$ V.E

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

V.S $I_1(s) = I_2(s) \frac{(sR_2C + 1)}{sR_2C}$ F.T

$$V_{il}(s) = I_1(s) (R_1 + sL + R_2) - R_2 I_2(s)$$

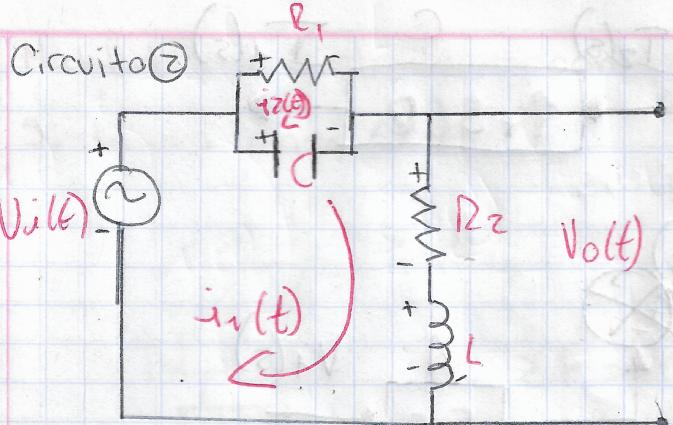
V.S $I_2(s) = I_1(s) \frac{(R_1 + sL + R_2)}{R_2}$ F.T $\frac{-V_{il}(s)}{R_2}$ F.T $= \frac{1}{R_2}$



$$-\frac{DA}{1-CB} \Rightarrow -\frac{\frac{1}{sL} \left(\frac{1}{R_1}\right)}{1 - \frac{sR_2C + 1}{sR_2C} \left(\frac{R_1 + sL + R_2}{R_2}\right)}$$

$$= \frac{-\frac{1}{sR_1L}}{1 - \frac{sR_1R_2C + R_1 + s^2R_2CL + sL + sR_2^2C + R_2}{sR_2^2C}}$$

$$= \frac{R_2^2C}{sR_1^2R_2CL + R_1^2L + s^2R_1R_2CL^2 + sR_1L^2 + R_1R_2L}$$



$$V_{il}(t) = \frac{1}{C} \int i_1(t) dt + R_2 i_1(t) + L \frac{di_1(t)}{dt} - \frac{1}{C} \int i_2(t) dt$$

$$\phi = \frac{1}{C} \int i_2(t) dt + R_1 i_2(t) - \frac{1}{C} \int i_1(t) dt$$

$$V_{ol}(t) = R_2 i_1(t) + L \frac{di_1(t)}{dt}$$

$$V_{il}(s) = \frac{1}{sc} I_1(s) + R_2 I_1(s) + sL I_1(s) - \frac{1}{sc} I_2(s)$$

$$\phi = \frac{1}{sc} I_2(s) + R_1 I_2(s) - \frac{1}{sc} I_1(s)$$

$$V_{ol}(t) = R_2 I_1(s) + sL I_1(s)$$

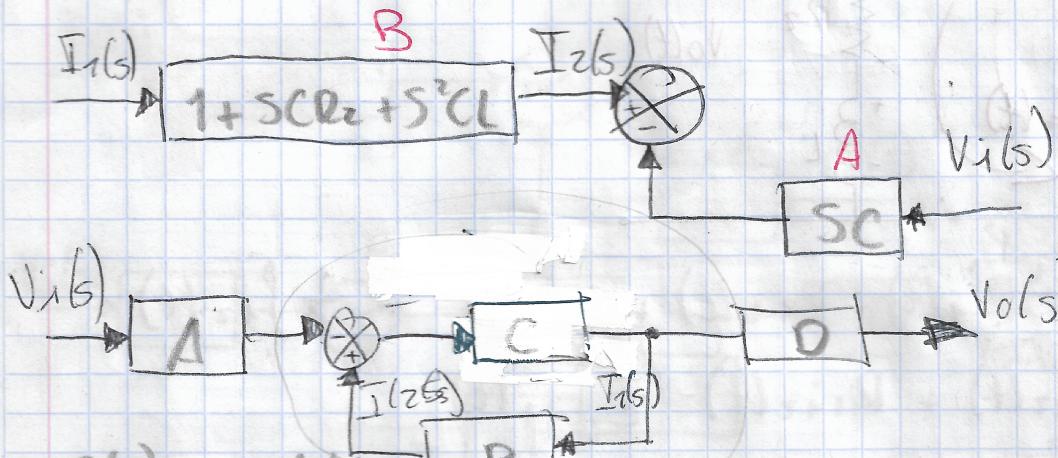
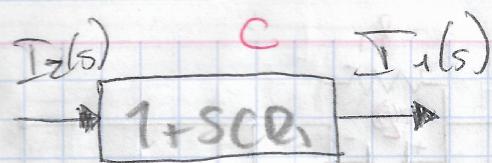
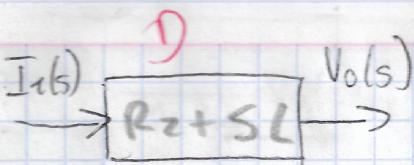
V.S $V_{ol}(t) = I_1(s)(R_2 + sL)$ F.F.

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

V.S $I_1(s) = I_2(s) / \left(1 + scR_1 \right)$ F.F.

$$V_{il}(s) = I_1(s) \left(\frac{1}{sc} + R_2 + sL \right) - \frac{1}{sc} I_2(s)$$

V.S $I_2(s) = I_1(s) / \left(1 + sc(R_2 + sL) \right) - V_{il}(s) / sc$ F.F.



$$\frac{C(s)}{R(s)} = \frac{G(s)}{1 - G(s)H(s)} \rightarrow \boxed{A} \rightarrow -\frac{C}{1 - CB} \rightarrow \boxed{D}$$

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

$$= \frac{-(1 + SCR_1)(SC)(R_z + SL)}{1 - (1 + SCR_1)(1 + SCR_2 + S^2 CL)}$$

$$= \frac{1 + SCR_1(SC)(R_z + SL)}{-1 + SCR_2 + S^2 CL + S^2 C^2 R_1 R_2 + S^3 C^2 R_1 L + SCR_2}$$

$$= \frac{-(1 + SCR_1)SCL(R_z + SC)}{-SCL(S^2 CR_1 L - SCR_1 R_2 - R_1 - SC L - R_2)}$$

$$= \frac{R_z + SCL + SCR_1 R_2 + S^2 CR_1 L}{R_z + SCL + R_1 + SCR_1 R_2 + S^2 CR_1 L} \rightarrow F.T$$