



Control

Álgebra de Bloques

NOMBRE DEL ALUMNO:

Altamirano Vargas Oscar Daniel

CARRERA:

ING. Mecatrónica

GRADO Y GRUPO:

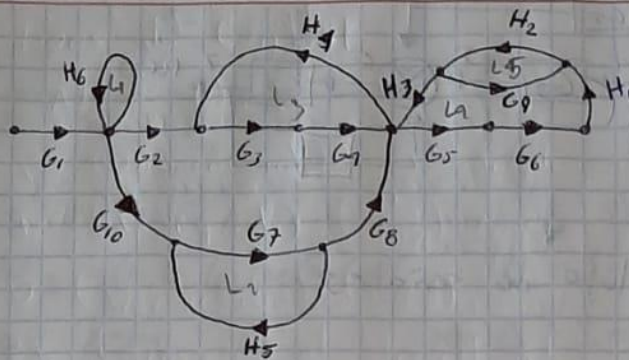
8°-B

CUATRIMESTRE:

8°- cuatrimestre

NOMBRE DEL DOCENTE:

Ing. Morán Garabito Carlos Enrique



Obtener la ecuación característica de un motor de CD
(todo el desarrollo, en la libreta, con símbolos.)

$$M_1 = G_1 G_2 G_3 G_4 G_5 G_6$$

$$M_2 = G_1 G_{10} G_7 G_8 G_5 G_6 = G_1 G_6 G_6 G_7 G_8 G_{10}$$

$$L_1 = H_6$$

$$L_2 = H_5 G_7$$

$$L_3 = G_3 G_4 H_4$$

$$L_4 = G_5 G_6 H_1 H_2 H_3 G_9$$

$$L_5 = G_9 H_2$$

$$L_1 L_2 L_3 L_5 = G_3 G_4 G_7 G_9 H_2 H_4 H_5 H_6$$

$$G(s) = \frac{G_1 G_2 G_3 G_4 G_5 G_6 + G_1 G_5 G_6 G_7 G_8 G_{10}}{1 - H_6 - H_5 G_7 - G_3 G_4 H_4 - G_5 G_6 H_1 H_2 H_3 G_9 - G_9 H_2 + G_3 G_4 G_7 G_9 H_2 H_4 H_5 H_6}$$

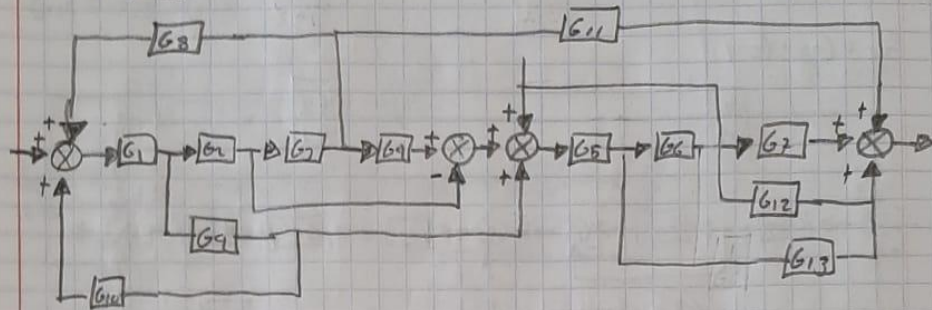
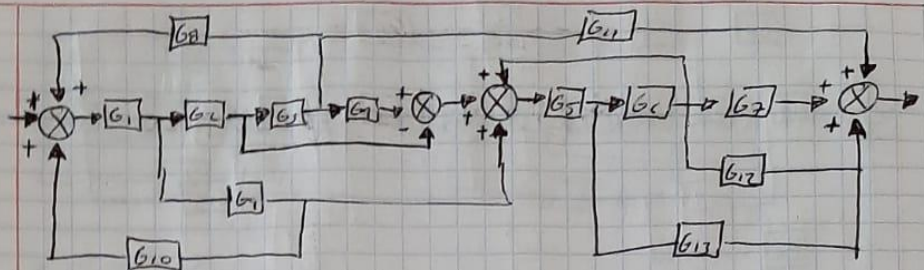
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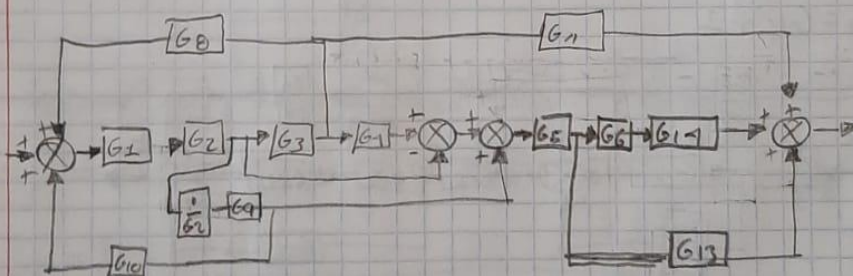


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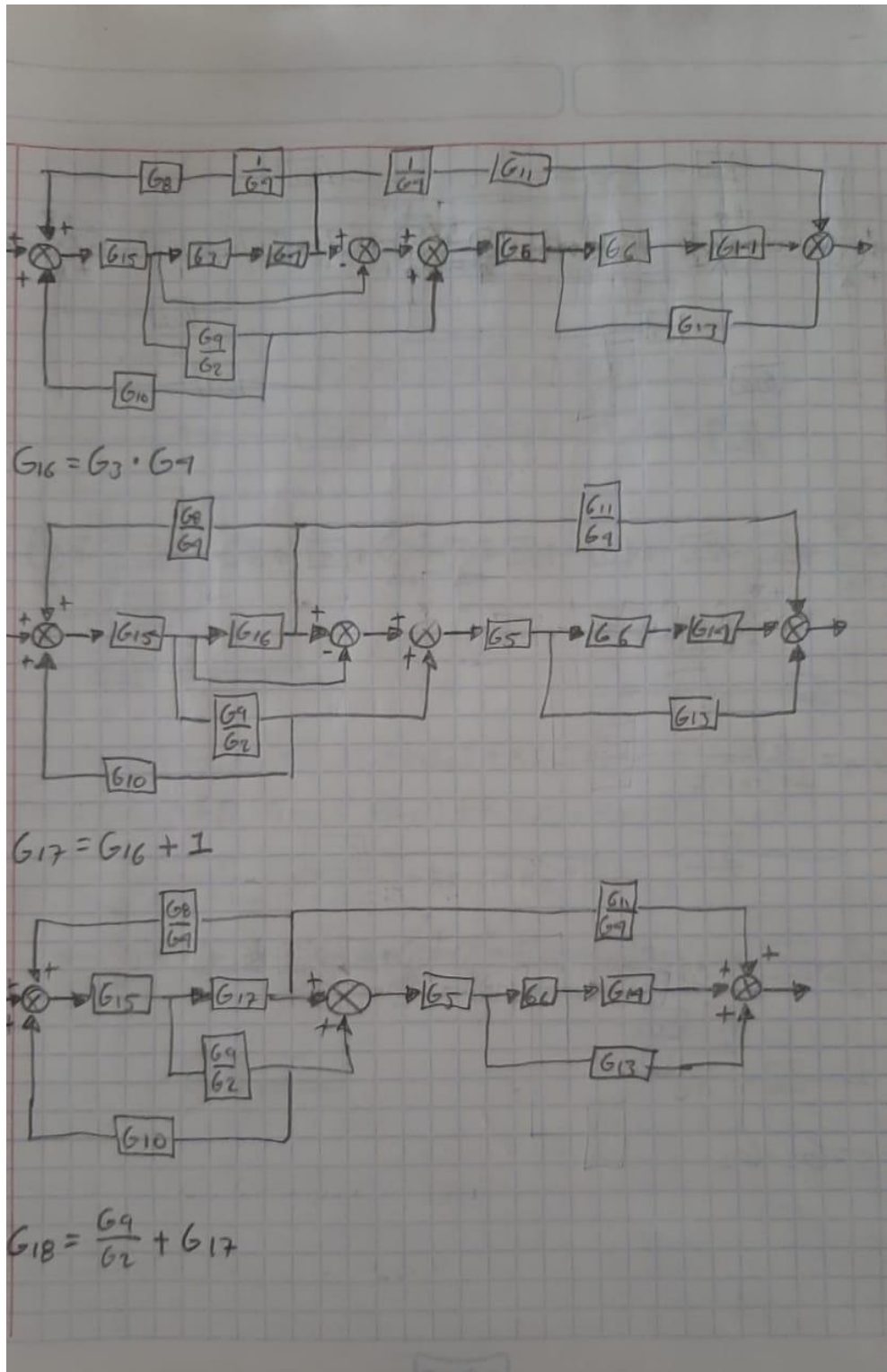
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$$G_{14} = \frac{G_7}{1 + G_7 G_{12}}$$



$$G_{15} = G_1 \cdot G_2$$



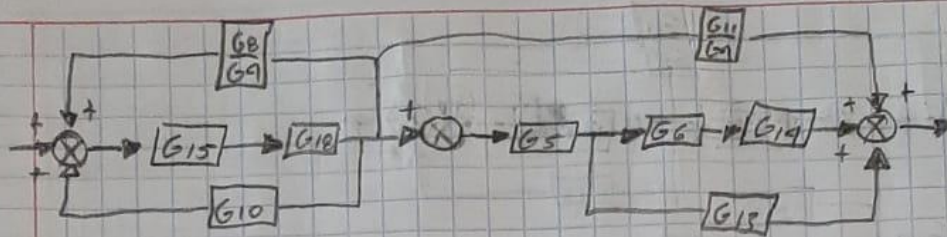
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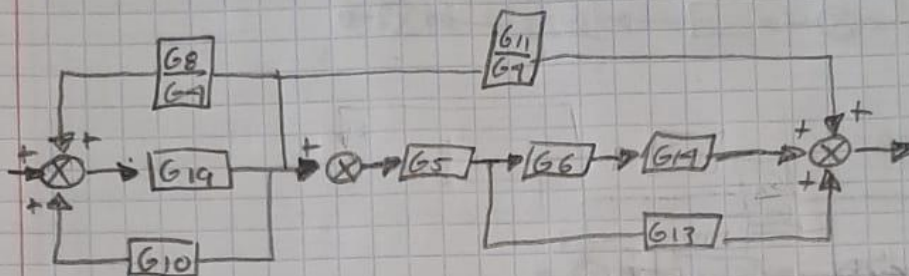


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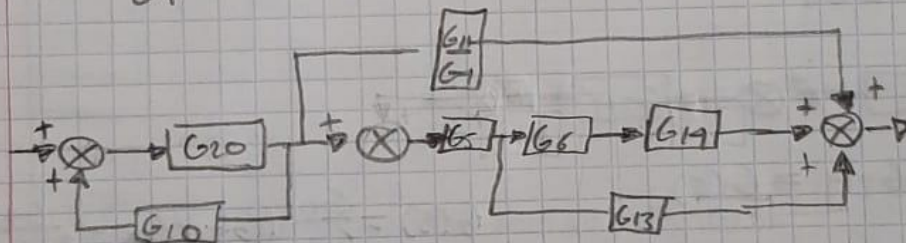
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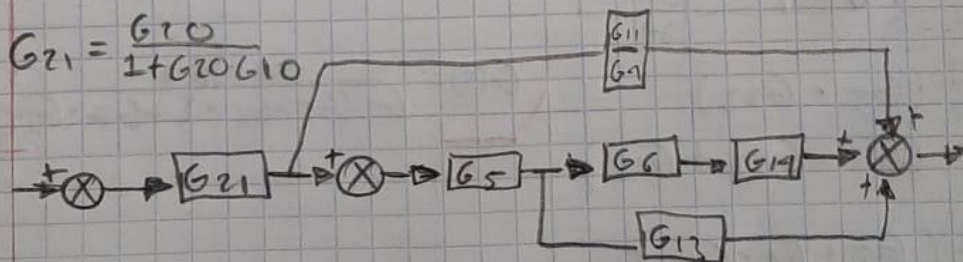
$$G_{19} = G_{15} \cdot G_{18}$$



$$G_{20} = \frac{G_8}{G_1} + G_{19}$$



$$G_{21} = \frac{G_{20}}{1 + G_{20}G_{10}}$$



$$G_{22} = G_6 \cdot G_{14}$$

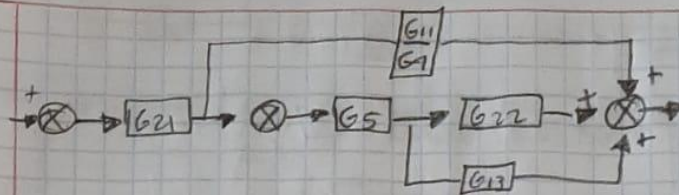
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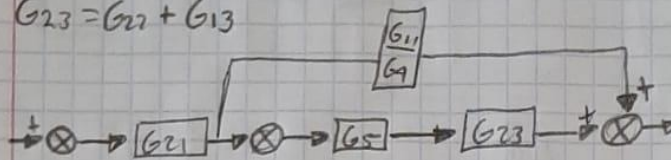


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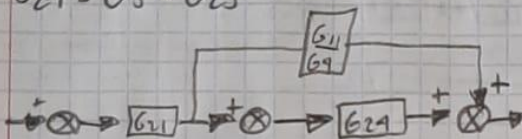
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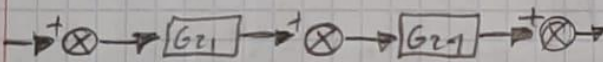
$$G_{23} = G_{22} + G_{13}$$



$$G_{24} = G_5 \cdot G_{23}$$



$$G_{25} = \frac{G_{11}}{G_4} + G_{24}$$



$$G_{25} = \frac{G_{11}}{G_4} + G_{24} = G(s)$$

$$G(s) = \frac{G_{11}}{G_4} (G_5 \cdot G_6 \cdot \frac{G_7}{1 + G_7 \cdot G_{12}})$$

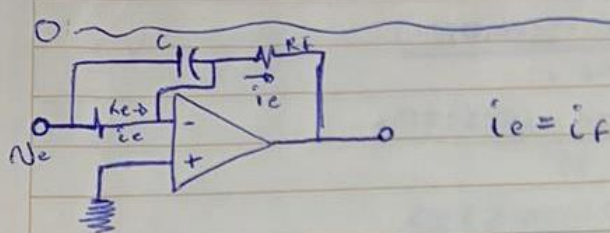
$$G(s) = \frac{G_{11}}{G_4} + G_{24}$$

$$G(s) = \frac{G_{11}}{G_4} (G_5 \cdot G_{23})$$

$$G(s) = \frac{G_{11}}{G_4} (G_5 \cdot G_{22} + G_{13})$$

$$G(s) = \frac{G_{11}}{G_4} (G_5 \cdot G_6 \cdot G_4 +$$

$$G(s) = \frac{G_{11} \cdot G_7}{G_4 (G_5 \cdot G_6 \cdot 1 + G_7 \cdot G_{12})}$$



11/02/2020

$$i_e = i_f$$

$$V_e R_e - V_o R_e + C \frac{dV_e}{dt} - C \frac{dV_o}{dt} = i_e$$

$$i_f = V_o R_f - V_s R_f$$

$$V_e R_e + C \frac{dV_e}{dt} = i_e$$

$$i_f = -V_s R_f$$

*Pasamos a la plas.....

$$V_e R_e + C s V_e = i_e$$

$$i_f = -V_s R_f$$

$$V_e R_e + C s V_e = V_{sal} R_f$$

$$V_e (R_e + C s) = -V_{sal} R_f$$

$$-\left(\frac{R_e + C s}{R_f}\right) = \frac{V_{sal}}{V_e}$$

$$K_p (1 + T_{db})$$

$$\frac{V_{sal}}{V_e} = \left(-\frac{R_e}{R_f} \right) \left(1 + \frac{C s}{R_s} \right)$$

→ Kp → Td

$$-\frac{R_e}{R_s} - \frac{R_e C s}{R_f R_e} = -\left(1 + \frac{R_e + C s}{R_f} \right)$$



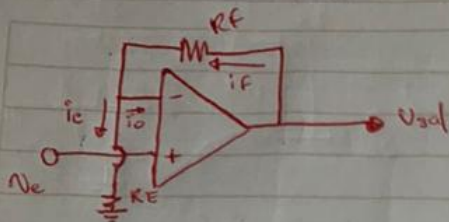
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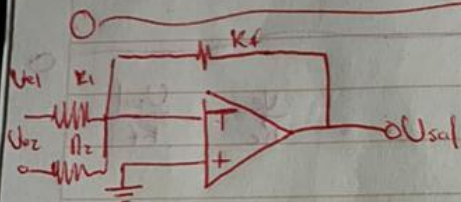
No inductor

$$i_p = i_o + i_e$$

$$\frac{V_e + V_o}{R_e} = \frac{V_{sal} - V_o}{R_f}$$

$$\frac{V_e}{R_e} = \frac{V_{sal} - V_e}{R_f}$$

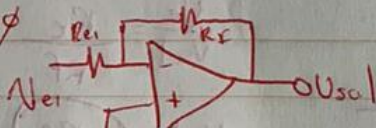
$$\frac{V_{sal}}{V_e} = \frac{R_e + R_f}{R_e} = k_p$$



Sumador

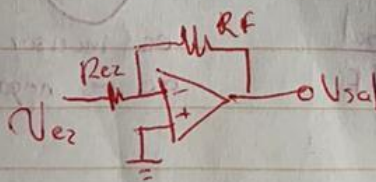
Teorema de superposición

$$V_{e2} = 0$$



$$\frac{V_{sal1}}{V_{e1}} = -\frac{R_f}{R_{e1}}$$

$$V_{sal1} = V_{e1} \left(-\frac{R_f}{R_{e1}} \right)$$



$$\frac{V_{sal}}{V_{e2}} = -\frac{R_f}{R_{e2}} \therefore V_{sal2} = V_{e2} \left(-\frac{R_f}{R_{e2}} \right)$$

Scribe