TEMA 3 REPRESENTACIÓN EXTERNA

1. Resultado:

$$X(s)=\frac{6+3s}{s\left(s^2+3\,s+6\right)} \xrightarrow{Transform.inversa} x(t)=1-e^{-1,5t}\cos\sqrt{\frac{15}{4}}t+\frac{\sqrt{15}}{5}e^{-1,5t}sen\sqrt{\frac{15}{4}}t$$

2.

3. Resultado:

$$x(t)=-\frac{25}{9}+\frac{10}{3}t+\frac{5}{2}e^{-t}+\frac{5}{18}e^{-3t}$$

$$x(t)=\frac{1}{2}-\frac{1}{2}e^{-t}(cost+sent)$$

$$x(t)=\frac{2}{\omega^2}(1-cos\omega t)$$

4.

5. Resultado: Opción c)

6. Resultado: Opción a)

7.

8. Resultado:

$$\frac{H_2(s)}{Q_{in}(s)}=\frac{1}{A_1A_2K_1K_2s^2+(A_1A_2K_1K_2+A_1K_2)s}$$

9.

10.

11.

12. Resultado:

$$\frac{Y(s)}{X(s)}=\frac{ABC+A(1-CD)(1-E)}{1-CD+FC}$$

13.

14. Resultado:

$$\frac{Y(s)}{R(s)}=\frac{G_1G_2G_C}{1+G_2G_4+G_1G_2G_CH}$$

15.

16. Resultado:

$$\frac{Y(s)}{R(s)} = \frac{G_1 + G_2}{1 + G_1^2 - G_2^2}$$

17.

18. Resultado:

$$\frac{Y(s)}{R(s)} = \frac{G + H_1}{1 + GH_2}$$

19.

20. Resultado:

$$Y(s) = \frac{G_{C1}G_{C2}G_V G_P}{1 + G_{C2}G_V G_{S2} + G_{C1}G_{C2}G_V G_P G_{S1}} \cdot R(s) + \frac{G_P}{1 + G_{C2}G_V G_{S2} + G_{C1}G_{C2}G_V G_P G_{S1}} \cdot D_2(s)$$

21.

22. Resultado:

$$\frac{Y(s)}{R(s)}\Big|_{D_2 = 0}^{D_1 = 0} = \frac{G_{C1}G_{C2}G_V G_P}{1 + G_{C2}G_V G_{S2} + G_{C1}G_{C2}G_V G_P G_{S1}}$$

$$\frac{Y(s)}{D_1(s)}\Big|_{D_2 = 0}^{R = 0} = \frac{G_d(1 + G_{S2}G_{C2}G_V) + G_{FF}G_{S3}G_{C2}G_V G_P}{1 + G_{C2}G_V G_{S2} + G_{C1}G_{C2}G_V G_P G_{S1}}$$

$$\frac{Y(s)}{D_2(s)}\Big|_{D_1 = 0}^{R = 0} = \frac{G_P}{1 + G_{C2}G_V G_{S2} + G_{C1}G_{C2}G_V G_P G_{S1}}$$