

$$3.1. T_1(s) = \frac{s^2 + 9}{s^2 + s\sqrt{2} + 1}$$

$$k = a \rightarrow a = 1$$

$$\omega_{0P}^2 = 1 \rightarrow \omega_{0P} = 1 \text{ rad/s}$$

$$\frac{\omega_{0P}}{Q_P} = \sqrt{2} \rightarrow Q_P = 1/\sqrt{2}$$

$$\omega_{0Z}^2 = 9 \rightarrow \omega_{0Z} = 3 \text{ rad/s}$$

busco "b"

$$\omega_{0Z} = \sqrt{\frac{b}{a}} \omega_{0P} \rightarrow 3 = \sqrt{b}$$

$$b = 9$$

busco "d"

$$\frac{\omega_{0Z}}{Q_Z} = 0 \rightarrow \text{como } \omega_{0Z} \neq 0, \text{ entonces } Q_Z \rightarrow \infty$$

$$Q_Z = \frac{Q_P}{d} \sqrt{ab} \rightarrow \text{para que } Q_Z \rightarrow \infty, d \rightarrow 0$$

determino L, C y R

$$\omega_{0P} = \frac{1}{\sqrt{LC}} = 1$$

$$LC = 1 \rightarrow C = 1F \text{ y } L = 1H$$

$$Q_P = \frac{R}{\sqrt{L/C}} \rightarrow R = \frac{1}{\sqrt{2}} \approx 0,707 \Omega$$

$$3.2 \quad T_2(s) = \frac{s^2 + 1/9}{s^2 + s/5 + 1}$$

$$\omega_0 z^2 = \frac{1}{9} \rightarrow \omega_0 z = \frac{1}{3}$$

$$\frac{\omega_0 z}{Q_z} = 0 \rightarrow Q_z \rightarrow \infty$$

$$\omega_0 p^2 = 1 \rightarrow \omega_0 p = 1 \text{ rad/s}$$

$$\frac{\omega_0 p}{Q_p} = \frac{1}{5} \rightarrow Q_p = 5$$

$$k = a \rightarrow a = 1$$

$$\omega_0 z = \sqrt{\frac{b}{a}} \omega_0 p \rightarrow \frac{1}{3} = \sqrt{b}$$

$$b = 1/9$$

$$Q_z = \frac{Q_p}{d} \sqrt{ab} \rightarrow \text{si } Q_z \rightarrow \infty \text{ entonces } d \rightarrow 0$$

$$\omega_0 p = \frac{1}{\sqrt{LC}} = 1$$

$$LC = 1 \rightarrow C = 1 \text{ F} \vee L = 1 \text{ H}$$

$$Q_p = \frac{R}{\sqrt{L/C}} = 5 \rightarrow R = 5 \Omega$$



$$3.3 \quad T_3(s) = \frac{s^2 + s/5 + 1}{s^2 + s\sqrt{2} + 1}$$

$$\omega_0 Z^2 = 1 \rightarrow \omega_0 Z = 1 \text{ rad/s}$$

$$\frac{\omega_0 Z}{Q_Z} = \frac{1}{5} \rightarrow Q_Z = 5$$

$$\omega_0 P^2 = 1 \rightarrow \omega_0 P = 1 \text{ rad/s}$$

$$\frac{\omega_0 P}{Q_P} = \sqrt{2} \rightarrow Q_P = 1/\sqrt{2}$$

$$k = a \rightarrow a = 1$$

$$\omega_0 Z = \sqrt{\frac{b}{a}} \omega_0 P \rightarrow b = 1$$

$$Q_Z = \frac{Q_P}{d} \sqrt{ab} \rightarrow 5 = \frac{1}{\sqrt{2}d}$$

$$d = \frac{1}{5\sqrt{2}}$$

$$\omega_0 P = \frac{1}{\sqrt{LC}} = 1 \rightarrow C = 1 \text{ F} \quad \text{and} \quad L = 1 \text{ H}$$

$$Q_P = \frac{R}{\sqrt{L/C}} \rightarrow R = \frac{1}{\sqrt{2}} \Omega$$