$$E_a(s) \longrightarrow \boxed{G(s)} \longrightarrow \omega(s) \qquad E_a(s) = \mathcal{L}\, e_a(t) = \frac{E_a}{s}$$

$$\omega(s) = G(s) \cdot E_a(s) = \left[\frac{K}{s^2 + 2\xi\omega_n s + \omega_n^2} \right] \cdot \frac{E_a}{s}$$

$$= \frac{K \cdot E_a}{s(s^2 + 2\xi\omega_n s + \omega_n^2)}$$

$$\omega(t) = \mathcal{L}^{-1}\omega(s) = K E_a \mathcal{L}^{-1} \frac{1}{s(s^2 + 2\xi\omega_n s + \omega_n^2)}$$

For:

$$\xi > 1 \longrightarrow \omega(t) = K E_a \mathcal{L}^{-1} \frac{1}{s(s+a)(s+b)}$$

$$\xi = 1 \longrightarrow \omega(t) = K E_a \mathcal{L}^{-1} \frac{1}{s(s+a)^2}$$

$$0 < \xi < 1 \longrightarrow \omega(t) = K E_a \mathcal{L}^{-1} \frac{1}{s(s^2 + 2\xi\omega_n s + \omega_n^2)}$$