$\omega_0 = \frac{1}{\sqrt{LC}}$ & $f_0 = \frac{\omega_0}{2\pi}$ & $a = \frac{R}{2L}$ & $\zeta = \frac{\alpha}{\omega_0}$

Given $L_1 = 1mH$, $C_1 = 1nF$, & $R_1 = 330\Omega$; 910Ω; $2.2k\Omega$; $7.5k\Omega$

For $R_1 = 330\Omega$: $\omega_0 = \frac{1}{\sqrt{0.001H \cdot (1\times10^{-9}F)}} = \sqrt{\frac{1}{1\times10^{-12}s^2}}$

$\omega_0 = \frac{1\ rad}{1\times10^{-6}s}$

* $1F = \frac{C}{V}$ & $1Hz = \frac{1}{s}$

$H = kg\cdot m^2\cdot s^{-2}\cdot A^{-2}$

$Ohms = kg\cdot m^2\cdot s^{-3}\cdot A^{-2}$

$f_0 = \frac{\frac{1}{1\times10^{-6}s}}{2\pi} = \frac{1}{2\pi\times10^{-6}}\ Hz$

$a = \frac{330\Omega}{2\cdot0.001H} = 165000\ \frac{rad}{sec}$

$\zeta = \frac{165000\ \frac{rad}{sec}}{\frac{1}{1\times10^{-6}}\ \frac{rad}{sec}} = 0.165$

For $R_1 = 910\Omega$: ω_0 stays the same for all R_1's & f_0 also

$a = \frac{910\Omega}{2\cdot0.001H} = 455000\ \frac{rad}{sec}$ $\zeta = \frac{455000\ \frac{rad}{sec}}{\frac{1}{1\times10^{-6}}\ \frac{rad}{sec}} = 0.455$

For $R_1 = 2.2k\Omega$: $a = \frac{2200\Omega}{0.002H} = 1,100,000\ \frac{rad}{sec}$ $\zeta = \frac{1,100,000\ \frac{rad}{sec}}{\frac{1}{1\times10^{-6}}\ \frac{rad}{sec}} = 1.1$

For $R_1 = 7.5k\Omega$: $a = \frac{7500\Omega}{0.002H} = 3,750,000\ \frac{rad}{sec}$ $\zeta = \frac{3,750,000\ \frac{rad}{sec}}{\frac{1}{1\times10^{-6}}\ \frac{rad}{sec}} = 3.75$

$R_1 = 330\Omega$ & 910Ω are underdamped; $R_1 = 2.2k\Omega$ is critically damped

$R_1 = 7.5k\Omega$ is overdamped