Series RLC Resonant Circuits:

$$\omega_o = \frac{1}{\sqrt{LC}}$$

$$\omega_2, \omega_1 = \pm\frac{R}{2L} + \sqrt{\left(\frac{R}{2L}\right)^2 + \frac{1}{LC}} \qquad \text{If } Q \geq 10 \text{ then} \qquad \omega_2, \omega_1 \approx \omega_0 \pm \frac{B}{2}$$

$$B = \omega_2 - \omega_1 \quad \text{OR} \quad B = \frac{R}{L} \quad \text{OR} \quad B = \frac{\omega_0}{Q}$$

$$Q = \frac{\omega_0 * L}{R} \quad \text{OR} \quad Q = \frac{1}{\omega_0 * R * C} \quad \text{OR} \quad Q = \frac{\omega_0}{B}$$

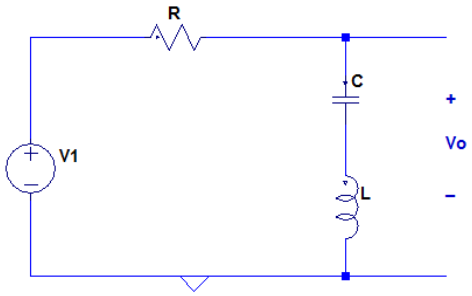

Figure : 1BandStop

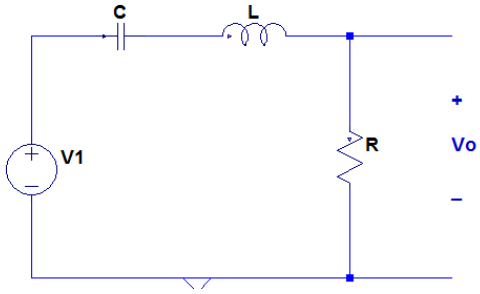

Figure: 2BandPass

Parallel RLC Resonant Circuits:

$$\omega_o = \frac{1}{\sqrt{LC}}$$

$$\omega_2, \omega_1 = \pm\frac{1}{2RC} + \sqrt{\left(\frac{1}{2RC}\right)^2 + \frac{1}{LC}} \qquad \text{If } Q \geq 10 \text{ then} \qquad \omega_2, \omega_1 \approx \omega_0 \pm \frac{B}{2}$$

$$B = \omega_2 - \omega_1 \quad \text{OR} \quad B = \frac{1}{RC} \quad \text{OR} \quad B = \frac{\omega_0}{Q}$$

$$Q = \omega_0 RC \quad \text{OR} \quad Q = \frac{R}{\omega_0 * L} \quad \text{OR} \quad Q = \frac{\omega_0}{B}$$