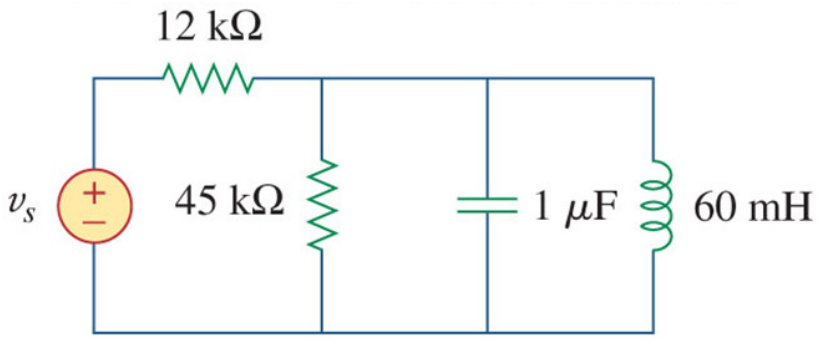
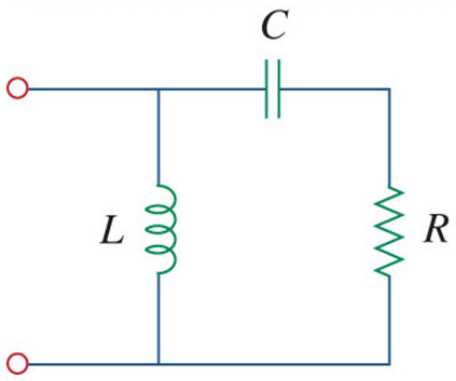
1. (Prob. 14.29 in text) Let $v_s = 20\cos(at)$ V in the circuit below. Find resonant frequency $\boldsymbol{\omega_o}$, quality factor **Q**, and bandwidth **B**, as seen by the capacitor.



2. (Prob. 14.35 from Text) A parallel *RLC* circuit has $R = 5\ \text{k}\Omega$, $L = 8\ \text{mH}$, and $C = 60\ \mu\text{F}$. Determine the following:

   a. The resonant frequency $\boldsymbol{\omega}_o$
   b. The bandwidth **B**
   c. The quality factor **Q**

3. (Prob. 14.38 from Text) Find the resonant frequency of the circuit in the figure below.



4. (Prob. 14.53 from Text) Design a series *RLC* type **bandpass** filter with cutoff frequencies of 10 kHz and 11 kHz. Assuming ***C* = 80 pF** (80×10^{-12}), find ***R***, ***L***, and ***Q***. **Draw** the circuit

5. (Prob. 14.54 from Text) Design passive **bandstop** filter with $\boldsymbol{\omega}_o$ = 10 rad/s and **Q** = 20. **Draw** the circuit.

6. (Prob. 14.67 from Text) Design an **active lowpass** filter with dc gain of 0.25 and corner frequency of 500 Hz. (Remember $\omega = 2\pi f$)

7. ("Based on" Prob. 14.68 from Text) Design an **active highpass** filter with dc voltage gain of +6 dB and corner frequency of 3000 Hz. (Remember $\boldsymbol{\omega = 2\pi f}$)