

Q1 [Rizzoni P8.53]

For the circuit shown in Figure P8.53, assuming the op amp is ideal, $C = 1\mu\text{F}$, $R_1 = 1.8\text{ k}\Omega$, $R_2 = 8.2\text{ k}\Omega$, $R_L = 333\text{ }\Omega$. Find:

- Whether the circuit is a low- or high- pass filter.
- The gain V_o/V_s in decibel in the passband.
- The cutoff frequency.

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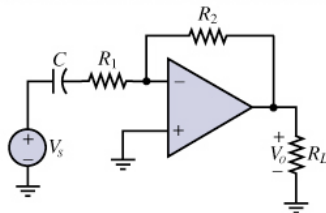


Fig P8.53

Q2 [Rizzoni P8.54]

For the circuit shown in Figure P8.53, assuming the op amp is ideal, $C = 100\text{ pF}$, $R_1 = 10\text{ k}\Omega$, $R_2 = 220\text{ k}\Omega$, $R_L = 1\text{ k}\Omega$. Find:

- Whether the circuit is a low- or high- pass filter.
- The gain V_o/V_s in decibel in the passband.
- The cutoff frequency.

Q3 [Rizzoni P8.57]

For the circuit shown in Figure P8.57, assuming the op amp is ideal, $C = 0.47\text{ }\mu\text{F}$, $R_1 = 9.1\text{ k}\Omega$, $R_2 = 22\text{ k}\Omega$, $R_L = 2.2\text{ k}\Omega$. Find:

- Whether the circuit is a low- or high- pass filter.
- The gain V_o/V_s in decibel in the passband.
- The cutoff frequency.

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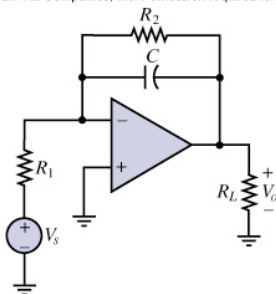


Fig P8.57

Q4 [Rizzoni P8.58]

For the circuit shown in Figure P8.57, assuming the op amp is ideal, $C = 0.47\text{ nF}$, $R_1 = 2.2\text{ k}\Omega$, $R_2 = 68\text{ k}\Omega$, $R_L = 1\text{ k}\Omega$. Find:

- Whether the circuit is a low- or high- pass filter.
- The gain V_o/V_s in decibel in the passband.
- The cutoff frequency.

Q5 [Rizzoni P8.59]

For the circuit shown in Figure P8.59, assuming the op amp is ideal, $C_1 = C_2 = 0.1 \mu\text{F}$, $R_1 = R_2 = 10 \text{ k}\Omega$. Find:

- (a) The passband gain.
- (b) The resonant frequency.

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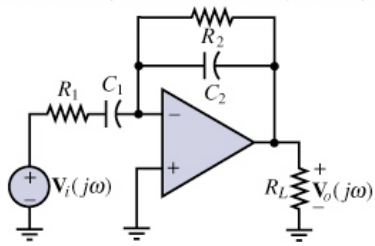


Fig P8.59

Numerical answers**Q1 [Rizzoni P8.53]**

- (a) A high-pass filter
- (b) 13.17 dB
- (c) 555.56 rad/s

Q2 [Rizzoni P8.54]

- (a) A high-pass filter
- (b) 26.84 dB
- (c) 1×10^6 rad/s

Q3 [Rizzoni P8.57]

- (a) A low-pass filter
- (b) 7.66 dB
- (c) 96.71 rad/s

Q4 [Rizzoni P8.58]

- (a) A low-pass filter
- (b) 29.8 dB
- (c) 31289 rad/s

Q5 [Rizzoni P8.59]

- (a) 1
- (b) 1000 rad/s