Electronic Systems
Active Filters
Sheet 3

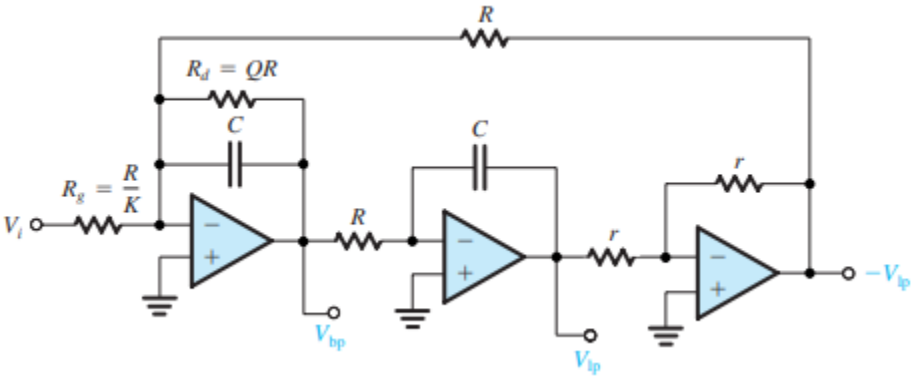
1. Design the KHN Biquad filter to realize a Band-pass function with a center frequency of 10 kHz and a 3dB band width of 200Hz. Choose C = 10nF. What is the value of the center-frequency gain?

2. Design the KHN Biquad filter to realize a high-pass function with f_0 = 10 kHz and Q = 2. Choose C = 1nF. What is the value of high-frequency gain obtained? What is the center-frequency gain of the bandpass function that is simultaneously available at the output of the first integrator.

3. Use the KHN circuit together with an output summing amplifier to design a band-stop notch filter with f_0 = 5 kHz, f_n = 8 kHz, Q = 5, and a dc gain of 3. Select C = 1 nF.

4. Use the KHN circuit together with an output summing amplifier to get the flat gain of the all pass filter.

5. Use the Tow–Thomas biquad Filter shown in Figure to design a second-order bandpass filter with f_0 = 10 kHz, Q = 20, and unity center-frequency gain. If R = 10 kΩ, give the values of C, R_d and R_g.



6. Use the Tow–Thomas biquad Filter shown in previous problem to analyze the transfer function of second-order low pass filter and design the filter with f_0 = 10 kHz, and center-frequency gain of 50. If R = 10 kΩ, give the values of C, R_d and R_g.