

3. What did you see on the oscilloscope when you change the frequency of the signal? Qualitatively draw graphs at $f = 10$ KHz, $f = 100$ kHz, $f = 1$ MHz of square wave. Explain why they look different.

4. Attach your LabVIEW measurement print-outs for high-pass filter and low-pass filter. Compare it with your manual plots. Are they in a good agreement in terms of shapes, amplitudes and 3 dB points? If not, try to explain the reason. What are the advantages you think of using LabVIEW rather than doing it manually?

5. Construct the RLC filter and connect the multimeter across the resistor. Using prelab values, note down the resonant frequency, the quality factor, Q , and the width of the passband?

6. Use LabView to plot the frequency response, sampling at 5 steps / decade. Find the half-power frequencies by adjusting the scales of the graph to zoom in. Attach both labview plots to this report. What are the 2 half-power frequencies, and what is the width of the passband? Are your findings consistent with the equation relating quality factor, bandwidth and resonant frequency? Explain.

7. What do you see in the frequency spectrum of the 40 KHz sine wave?

8. What frequencies are contained in the viewable area for 40 KHz and 100 KHz for the square wave (remember to adjust your plot window)? Which harmonics are contained in a square wave ? Repeat for the triangle wave.

9. Print out the generated transfer function for the high pass filter.

10. Repeat question 9 for the second order band pass filter.