ECE 3043
Homework Assignment No. 5

Summer 2018 Homework 5 for Experiment No. 6

Due Second Meeting Week of June 18

1. Design an inverting bandpass op amp amplifier/filter (Figure 1) with a midband voltage gain with a magnitude of 7.3, a lower -3db frequency of $100\,\text{Hz}$, and an upper -3db frequency of $30\,\text{kHz}$. The circuit shown in Fig. 1 is suggested. Pick the capacitor $C_1 = 0.1\,\mu\text{F}$ and compute the other components. Perform Bode plots with Mathcad, Matlab, Multisim and LT SPICE as the frequency ranges from one tenth of the lower ciritical frequency to ten times the highest. Assume that the op amp is ideal.

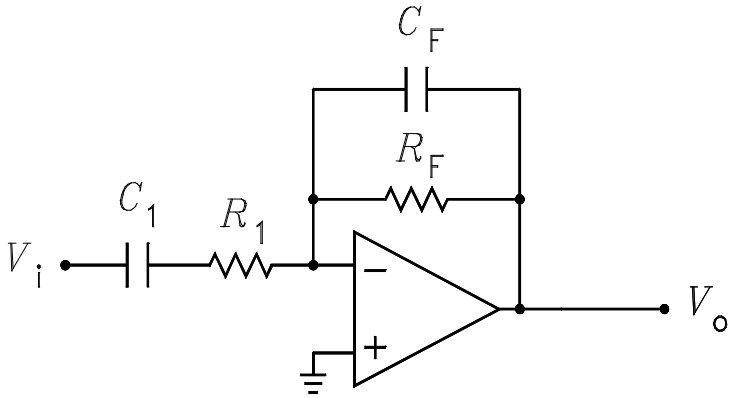

Fig. 1

2. Design an op amp noninverting high pass shelving amplifier/filter (Figure 2). The dc gain is to be 1, the infinite frequency gain 7.3, and the pole frequency $30\,\text{kHz}$. The circuit shown in Fig. 2 is suggested. Pick $C_1 = 0.1\,\mu\text{F}$ and solve for the other circuit components. Perform the same analyses as for the circuit in Problem 1.

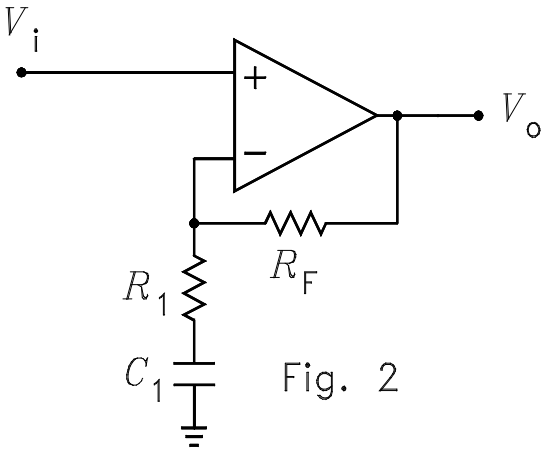

Fig. 2