

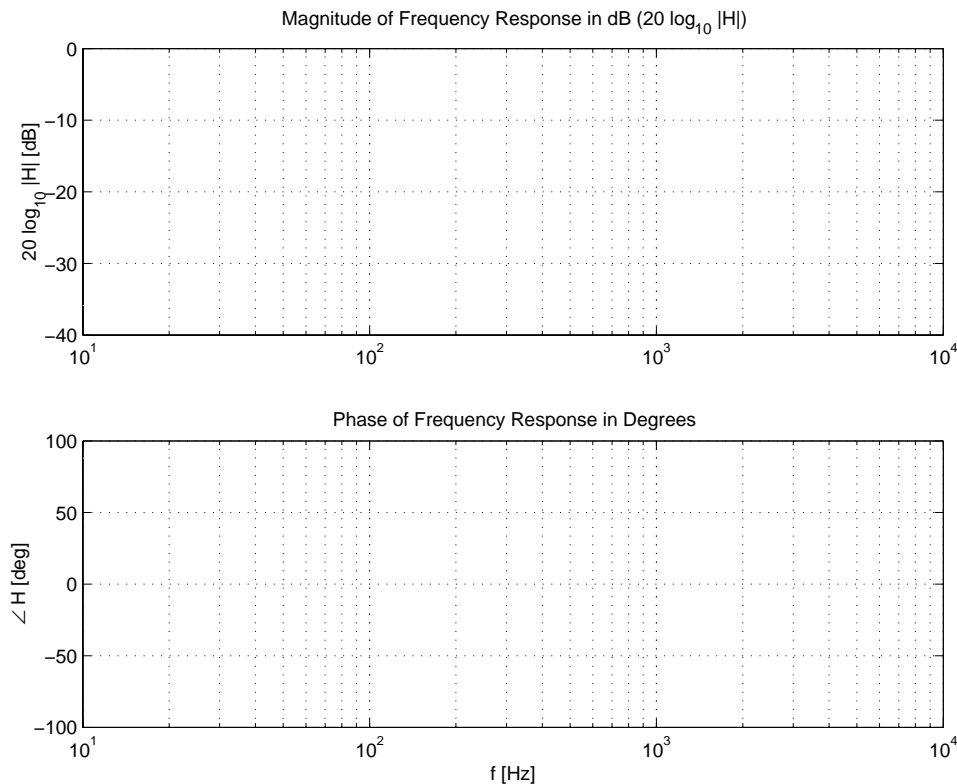
NAME:

Lab Section:

## Lab Worksheet: Lab 2

**Q1.** Draw and label the schematic of your BPF design. What values did you obtain in PSpice for the center frequency  $f_c$  and the -3dB bandwidth?

**Q2.** In the empty graph below, enter the points of the magnitude and the phase of the frequency response of the BPF that you measured in E2. In particular, show the center frequency  $f_c$  and the -3dB points used to determine the bandwidth. What is the value of the phase  $\angle H$  at  $f_c$ ? Why was the OpAmp needed in the circuit?



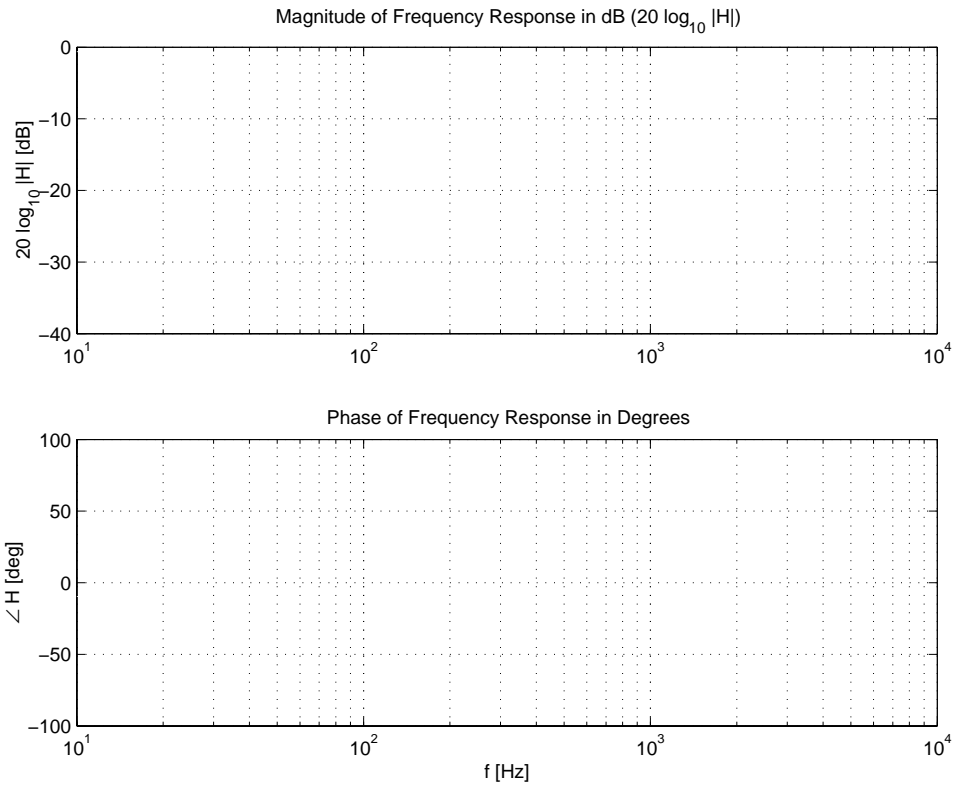
**Q3.** Sketch and label the step response of the BPF in E2 that you measured with the sound card probe in E3. What is the time constant of the step response?

What additional functions would be needed in the Matlab script file so that you could easily plot the magnitude and the phase of the frequency response  $H$  from the sweeping sine signal that you recorded in E3?

**Q4.** Draw and label the schematic of your BSF design. What values did you obtain in PSpice for the attenuation at the center frequency  $f_c$  and the -3dB bandwidth?

Sketch and label the step response that you measured in E4 of your BSF circuit. What is the time constant of the step response? How did you measure the step response?

In the empty graph below, enter the points of the magnitude and the phase of the frequency response of your BSF circuit that you measured in E4. In particular, show the values you measured at the center frequency  $f_c$  and the -3dB points. What is the phase  $\angle H$  at  $f_c$ ? How did you measure the frequency response?



**Q5.** What was the most important thing you learned in this lab?

**Q6.** What was the most interesting aspect of this lab?

**Q7.** How could this lab be improved?