## 11.3.2: Passive RC Filter (50 points)

1. In the space below, provide the frequency responses of both *vC(t)* and *vR(t)* in the circuit shown in Figure 1. (4 pts)
2. In the space below, provide the cutoff frequency, the DC gain, and the high frequency gain of both of the frequency responses of part 1. (6 pts)
3. Attach to this worksheet sketches of the magnitude and phase responses of both frequency responses of part 1. (4 pts)
4. In the space below, provide a table showing the input frequencies, the amplitudes of the voltages *vIN(t)* and *vR(t),* and the time difference between *vIN(t)* and *vR(t)* for the frequencies specified in part (a) of the lab procedures. (10 pts)
5. **DEMO**: Have a teaching assistant initial this sheet, indicating that they have observed your circuit’s operation. (4 pts total)

**TA Initials: \_\_\_\_\_\_\_**

1. In the space below, provide a table showing the input frequencies, the amplitudes of the voltages *vIN(t)* and *vC(t),* and the time difference between *vIN(t)* and *vC(t)* for the frequencies specified in part (a) of the lab procedures. (10 pts)
2. **DEMO**: Have a teaching assistant initial this sheet, indicating that they have observed your circuit’s operation. (4 pts total)

**TA Initials: \_\_\_\_\_\_\_**

1. Attach to this worksheet a plot of the theoretical magnitude and phase response with *vR(t)* as the circuit output, overlaid with the data from part 4 above. In the space below, comment on the agreement between the theoretical frequency response and the measured data. Also characterize the circuit as either a high-pass or a low-pass filter. (4 pts)
2. Attach to this worksheet a plot of the theoretical magnitude and phase response with *vC(t)* as the circuit output, overlaid with the data from part 6 above. In the space below, comment on the agreement between the theoretical frequency response and the measured data. Also characterize the circuit as either a high-pass or a low-pass filter. (4 pts)