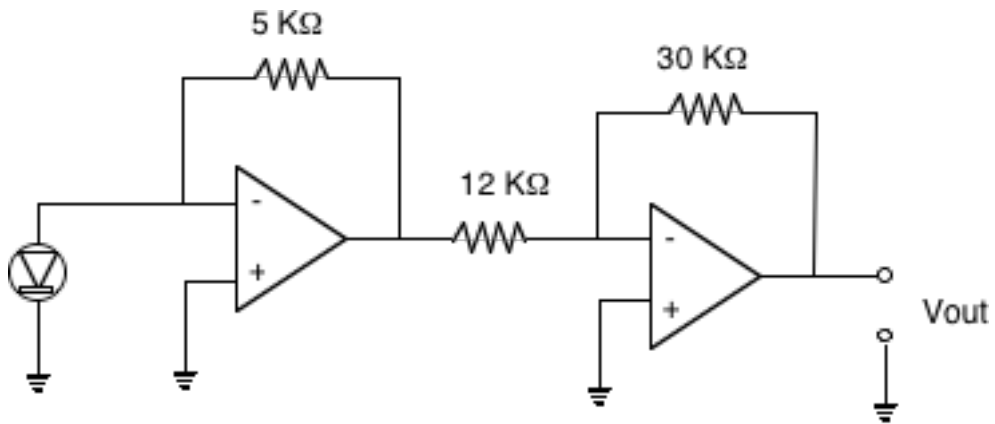


R. Corn Chem 243 Winter 2017

Operation Amplifier "Quiz"

1) Photodiodes and Op Amps.

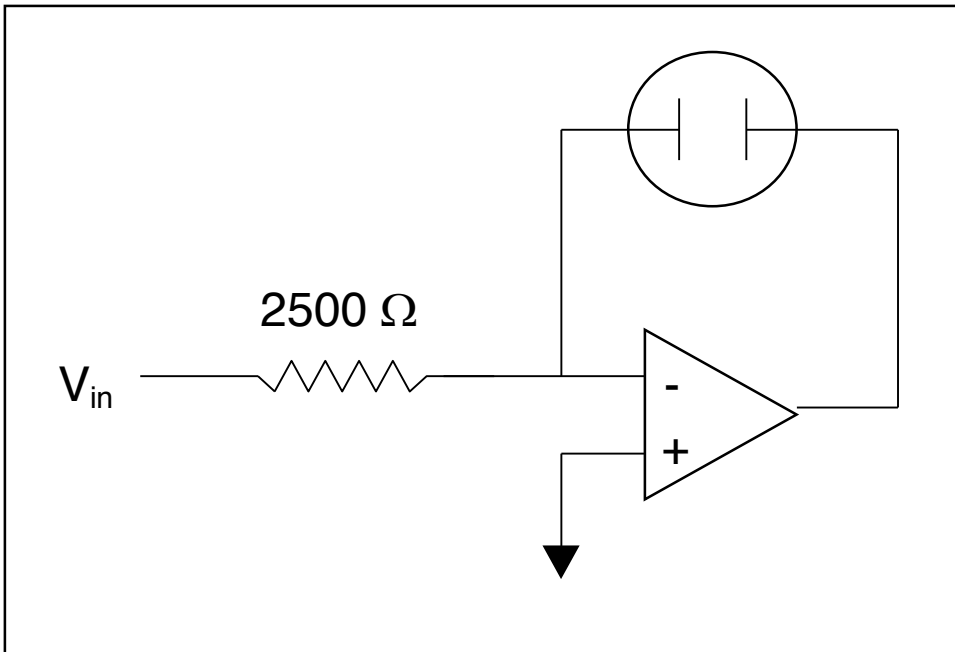
The following is an Op Amp circuit for a photodiode:



When the photodiode is exposed to a 800 nm laser emitting diode with a power of 125 microwatts, a voltage V_{out} of 3.78V is measured. Calculate the radiant sensitivity of this photodiode at 800 nm.

2) Galvanostats.

The following is an Op Amp circuit for a two electrode galvanostat:



Determine the Voltage V_{in} required to set the galvanostat to pass 0.750 milliamps through the electrochemical cell (the circle).

3) Motion Sensor.

We can create an optical movement sensor by placing two photodiodes side by side. We then need to measure the difference in the photocurrent from the two photodiodes in order to sense motion. Start with two photodiodes which produce currents i_1 and i_2 . Create an op amp circuit containing these photodiodes that outputs the difference voltage $V_{out} = 100(i_1 - i_2)$. (Hint: use a current follower with two inputs into V- to sum the currents).