

University of California at Berkeley
College of Engineering
Department of Electrical Engineering and Computer
Sciences

EE 105 Labs
Lab 3 Worksheet: Diodes, Rectifiers, Optical
Transceivers

Name(s): _____

Lab Section: _____

Submit this worksheet to Gradescope before your lab section the week it is due.

5.1 Half Bridge Rectifier

Is the voltage displayed on the same as the oscilloscope? Why or why not?

After adding 1 μF capacitor, what happens to amplitude and waveform?

Oscilloscope output:

10 μF frequency: _____

1 nF frequency: _____

Why is this happening? What is the capacitor doing?

5.2 LED Transmitter

DC supply voltage V_s that achieves a 20 mA current through the LED: _____

5.3 Photodiode

Is the current dependent on the supply voltage V_{dd} ? Why or why not?

5.4 Receiver – DC

Voltage output after the first op-amp: _____

Voltage output after the second op-amp: _____

	LED Voltage	LED Current
Indicator LED		

Voltage output at second op-amp with the red LED off: _____

Photodiode current: _____ ; Irradiance: _____

Irradiance achieved with cell phone: _____

5.5 Receiver – AC

Attach the function generator output waveform and the amplifier output waveform. What happens to the output waveform as the frequency increases?