

CECS 311 - LAB 1 – Part 1
LEDs

NAME:

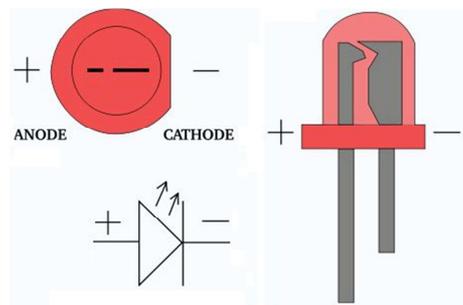
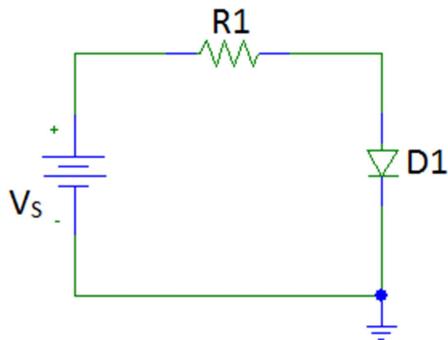
POSSIBLE POINTS: 10

STUDENT ID:

COURSE DATE & TIME:

LEDs -

Use the Benchtop Variable Power Supplies and the provided LED to connect the following circuit.



Turn on the Benchtop Variable Power Supply using the smallest voltage that the PSU (Power Supply Unit) can produce.

Start at 0v and try to go up to 5v. Fill out the following table as you increase your voltage. Use a Multimeter to double check the voltage being displayed on the bench PSU. Usually your multimeter will be more accurate than the displayed voltage.

V_s	I_T	V_D	V_{R1}	Brightness of LED (simple description)
0.50v				
0.75v				
1.00v				
1.25v				
1.50v				
1.75v				
2.00v				
2.25v				
2.50v				
2.75v				
3.00v				
3.50v				
4.00v				
4.50v				
5.00v				

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For the following questions, use the data gathered above and the datasheet found on the course website.

- 1.) LED's are Current or Voltage driven devices?
- 2.) Why did the LED get brighter when the voltage was increased?
- 3.) Write a simple one sentence description of what it means for an LED to be Current or Voltage driven.
- 4.) What is V_f according to the datasheet?
- 5.) What was V_f according to your test?
- 6.) What is the max current that the LED should ever have through it according to the datasheet?
- 7.) Try adjusting the voltage until you get 30ma through the LED. Look directly at the LED from the top of it, notice that not only is it really bright but that the shape is designed as a lense to focus the light. Now adjust the current back down to what you think is a usable brightness for the LED (this is 100% subjective). What is the current at the useable brightness?
- 8.) (True/False) It's ok to sometimes use an LED without a resistor. If you answered True, please explain...