University of Anbar
College of Engineering
Dept. of Electrical Engineering

Lab. Name: Electronic I
Experiment no.: 7
Lab. Supervisor: Munther N. Thiyab

Experiment #7- Part#2

Light Emitting Diodes

Procedure

1. Connect the circuit shown in Fig.5, and increase the input DC voltage from 0V to 15V in several steps. Use red LED and record, V_D and, I_D according to Table 2.

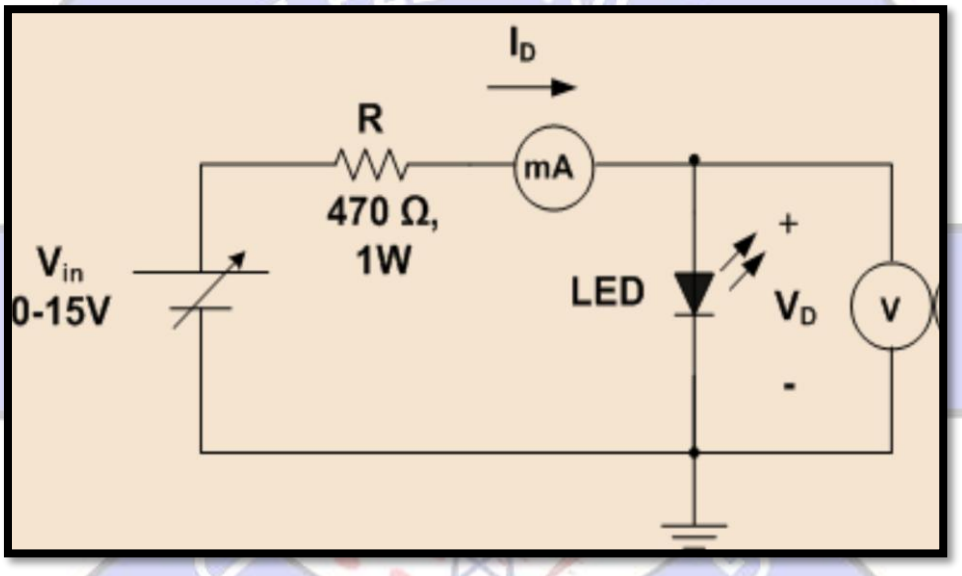


Figure 5: The LED Test Circuit

Table 2: Recorded Data of the LED Test Circuit

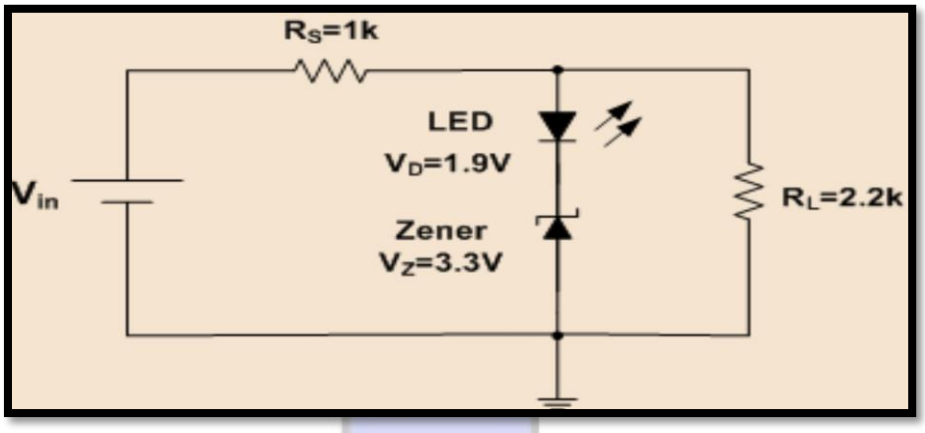
V_{in}(V)	V_D(V)	I_D(mA)
0		
1		
2		
3		
4		
5		

6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

2. Repeat step 1 after replacing the red LED with a yellow colored one. If possible
3. Repeat step 1 after replacing the LED with a green colored one. If possible

Discussion

1. Plot the forward characteristics of each LED on the same graph.
2. From the sketched curves, determine the threshold voltage for each LED. Determine also the forward static resistance at 10mA for each diode.
3. Which factor determines the color of the emitted light of the LED?
4. A certain LED has a typical forward voltage of 2.2V, and a maximum current of 30mA. If this diode is to be connected to a voltage source of 15V, determine the suitable value of the current limiting resistor. Find the current flowing in the LED when the input voltage is reduced to 8V. Assume the voltage drop across the diode remains constant.
5. Determine the minimum input voltage required to turn on the Zener diode in the following circuit.



6. What are the features of LEDs over conventional bulbs? Name some applications for LEDs.
7. A yellow colored LED with a forward voltage drop of 2.1V is to be connected to a 5.0V stabilized DC power supply. Calculate the value of the series resistor required to limit the forward current to less than 10mA. Also calculate the current flowing through the diode if a 100Ω series resistor is used instead of the calculated first.
8. How can you connect two LED diodes with different colors in parallel to the same DC power supply? Sketch the circuit diagram and justify the method of wiring.