IV. Questions

Before coming to class, print this page and fill in your answers. This is your "pre-lab" which might be collected for grading.

1. Which device, the Red or the Infra-red LED emits light with a larger wavelength?

   Infrared LED lights emit light with a longer wavelength

2. Which device, the RED LED or the Infra-red LED, has a larger forward voltage (clue: check the datasheets of your devices)

   IR LED lights have a larger forward voltage

3. How much current can your IR LED carry continuously (according to the manufacturer's specsheet)?

   100mA

4. Which measurement device, an Ampermeter or a Voltmeter, acts as a short circuit?

   Both can potentially be used as a short circuit

5. What is the most prevalent semiconductor material?

   silicon

6. The specsheet of the IR LED lists "GaAlAs" as its 'chip material'. What does this mean?

   This is the material it is made out of, short for gallium aluminum arsenide

7. What is the maximum permissible reverse-bias voltage for your IR LED? How about that of the RED LED?

   5V and 5V

8. What is the voltage at the output of Figure 3(a) circuit if the input is 1V and the two resistors have equal values?

   0.5V

9. Electrically fragile devices can be protected by setting up a compliance*. To protect your LED do you need compliance voltage or compliance current? What value would you use?

   Compliance current. 10mA

*do a web search using the words "compliance" and "Keithley" (short instructional videos are available)