Experiment 2

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Time: 2:17pm - 4:30pm

Experiment 2: Lights in Circuits

EQUIPMENT NEEDED:

- AC/DC Electronics Lab Board: Wire Leads
- (2) D-cell Batteries
- Graph Paper

Purpose

The purpose of this lab is to determine how light bulbs behave in different circuit arrangements. Different ways of connecting two batteries will also be investigated.

Procedure

PART A

➤ **NOTE:** Due to variations from bulb to bulb, the brightness of one bulb may be substantially different from the brightness of another bulb in "identical" situations.

① Use two pieces of wire to connect a single light bulb to one of the D-cells in such a way that the light will glow. Include a "switch" to turn the light on and off, preventing it from being on continuously. (You should have completed this step in Experiment 1. If that is the case, review what you did then. If not, continue with this step.)

1 → ② Use additional wires as needed to connect a second light into the circuit in such a way that it is also lighted. Discuss your plans with your lab partner before you begin. Once you have achieved success, sketch the connections that you made in the form of a circuit diagram using standard symbols. Annotate your circuit diagram by making appropriate notes to the side indicating what happened with that particular circuit.

➤ **NOTE:** Is your original light the same brightness, or was it brighter or dimmer than it was during step 1? Can you explain any differences in the brightness, or why it is the same?

2 → ③ If one of the light bulbs is unscrewed, does the other bulb go out or does it stay on? Why or why not?

3 → ④ Design a circuit that will allow you to light all three lights, with each one being equally bright. Draw the circuit diagram once you have been successful. If you could characterize the circuit as being a series or parallel circuit, which would it be? What happens if you unscrew one of the bulbs? Explain.

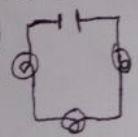
4 → ⑤ Design another circuit which will also light all three bulbs, but with the bulbs all being equally bright, even though they may be brighter or dimmer than in step 4. Try it. When you are successful, draw the circuit diagram. What happens if you unscrew one of the bulbs? Explain.

5 → ⑥ Devise a circuit which will light two bulbs at the same intensity, but the third at a different intensity. Try it. When successful, draw the circuit diagram. What happens if you unscrew one of the bulbs? Explain.

➤ **NOTE:** Are there any generalizations that you can state about different connections to a set of lights? ~~If depends on what kind of circuit being used because it has different flows of electricity.~~

Series Circuit

5.)



When you unscrewed a one bulb it will affect the other bulbs that follows.

Parallel Circuit

3.)

If you unscrewed one bulb the other bulb will stay lights on.

Answer: 1.) We ~~dind~~ didn't use two light bulb in our Lab Experiment.

2.) the bulb that unscrewed will not light on and the other bulb will stay on due to the parallel circuit that being used.

PART B

⑦ Connect a single D-cell to a single light as in step 1, using a spring clip "switch" to allow you to easily turn the current on and off. Note the brightness of the light.

⑧ Now connect the second D-cell into the circuit as shown in Figure 2.1a. What is the effect on the brightness of the light?

we didn't use a dry cell in our lab experiment 2.

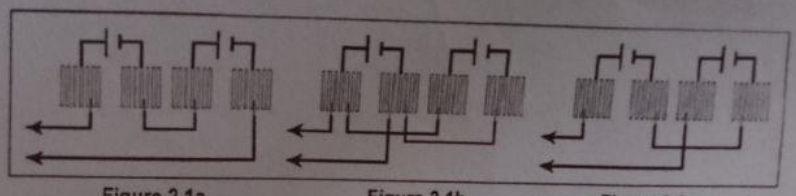


Figure 2.1a Figure 2.1b Figure 2.1c

⑨ Connect the second D-cell as in Figure 2.1b. What is the effect on the brightness?

⑩ Finally, connect the second D-cell as in figure 2.1c. What is the effect on the brightness?

➤ **NOTE:** Determine the nature of the connections between the D-cells you made in steps 8-10. Which of these was most useful in making the light brighter? Which was least useful? Can you determine a reason why each behaved as it did?

PART C

⑪ Connect the circuit shown in Figure 2.2. What is the effect of rotating the knob on the device that is identified as a "Potentiometer?" the potentiometer is the component which it control the voltage that being flow and you can adjust it to dimmer or brighter.

Discussion

① Answer the questions which appear during the experiment procedure. Pay particular attention to the "NOTED:" questions.

1– ② What are the apparent rules for the operation of lights in series? In parallel?

2– ③ What are the apparent rules for the operation of batteries in series? In parallel?

3– ④ What is one function of a potentiometer in a circuit?

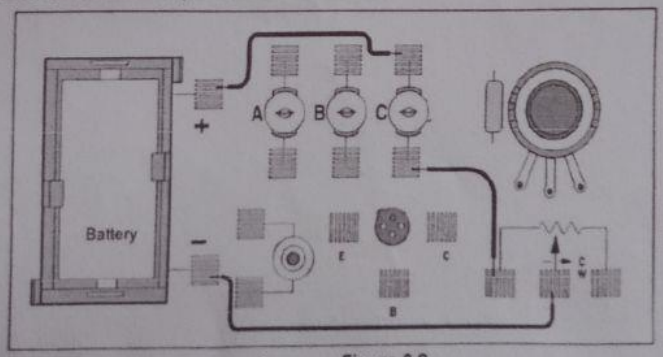


Figure 2.2

1.) In series, when one component being interrupt the light will change and in parallel when one component being interrupt the other will change but the other won't.

2.) In series, when the batteries being interrupt the otte components won't function, same for the parallel.

3. It control the voltage that flow and that is the component that responsible for changing the output of the bulb.

DOCUMENTARY: