

**University of Jordan  
School of Engineering  
Electrical Engineering Department**

**EE 219  
Electrical Circuits Lab**

**EXPERIMENT 10 REPORT  
HOME WIRING BASICS**

**Section # \_\_\_\_\_ Group # \_\_\_\_\_**

**Student Name**

**ID**

- 1.**
- 2.**
- 3.**
- 4.**

# EXPERIMENT 10

## HOME WIRING BASICS

### PROCEDURE A - CONDUCTOR SIZES AND TYPES

1. You will be provided with three wires that are used in residential wiring. Measure both the diameter of the inner copper conductor and the outer overall diameter of the wire. Record this information in Table 3. Use the inner copper conductor diameter to evaluate the cross sectional area of each wire, then use Tables 1 and 2 above to decide the maximum current these wires are designed to carry.

**Table 3**

	Wire 1	Wire 2	Wire 3
Copper diameter (mm)			
Copper cross sectional area ( $A = \pi r^2$ ) (mm <sup>2</sup> )			
Wire outer diameter (mm)			
Wire current capacity (A)			
Wire color			

2. What are the two most popular wire sizes used in residential wiring in Jordan? Ask if you do not know.

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3. Another type of cable you will be provided with in the Lab is used for Ethernet networks. Describe the cable (each wire diameter, number of wires in the cable, colors, etc).

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4. What is the name of the connector attached to the Ethernet cable described above?

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### PROCEDURE B - LUMINAIRES AND LAMPS

1. What is the energy efficacy (lumens per Watt) of an LED light bulb? Why are LED bulbs not yet as popular as CFLs in Jordan and other parts of the world?

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2. Look around you in the Lab. What type of light source is used in the lab? Why?

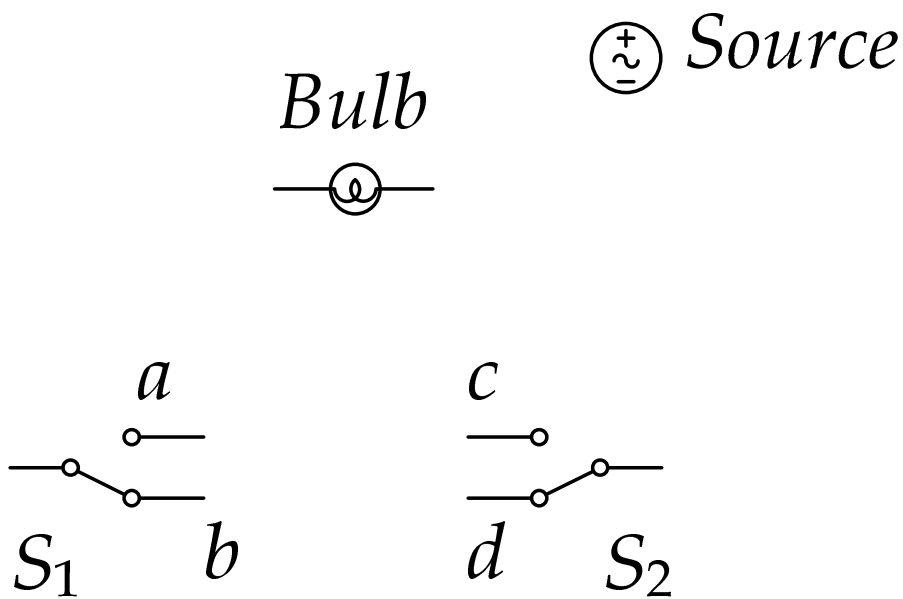
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3. List two reasons why the fluorescent lamps require a ballast to work properly?

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**PROCEDURE C - SWITCH CONTROL OF LIGHTING CIRCUITS**

1. To understand the above diagram, re-draw it as a schematic in the space provided below. Notice that the bulb is considered as a resistive load.



3. Which positions of the switches S1 and S2 above result in the light switching ON?

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4. Which type of switch do you think will be helpful to allow three switches to control one light on a stairway?

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**PROCEDURE D - SAFETY AND PROTECTION**

1. What is the current limit after which humans start suffering severe injuries?

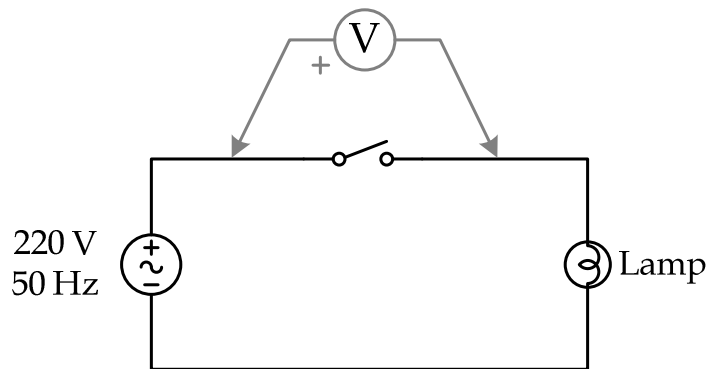
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2. Identify the circuit breakers in the Lab and your home. What is the current rating for some of these circuit breakers?

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3. Some people think that OFF switches are safe. This is wrong. To see that, determine the voltage between the two ends of the single-pole switch shown below (as measured by the voltmeter)? Hint: Treat the lamp as a resistor.

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**CONCLUSIONS**

Summarize in clear but concise format what you learned from this experiment:

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