**Development and Measurement of an Electrical Circuit with Lamp and Switch**

**Abstract:**

The project aimed to design and implement an electrical circuit comprising of a lamp and a switch, and to measure the current flowing through the circuit. This project was undertaken as part of the Basic Electrical and Electronics Engineering (BEE) curriculum at St. John College of Engineering and Management. The circuit was constructed using standard electrical components to demonstrate fundamental principles of circuit design and measurement.

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**1. Introduction:**

The project aimed to provide practical exposure to the concepts of electrical circuits and measurement techniques. By designing and constructing a simple circuit with a lamp and a switch, students gained hands-on experience in circuit assembly, troubleshooting, and current measurement.

**2. Objective:**

The primary objective of the project was to:

•Design and construct an electrical circuit with a lamp and a switch.

•Measure the current flowing through the circuit using appropriate instrumentation.

**3. Methodology:**

The project followed a systematic approach, including:

•Planning: Identifying the components required for the circuit and sketching the circuit diagram.

•Assembly: Physically connecting the components on a according to the circuit diagram.

•Testing: Verifying the functionality of the circuit by performing continuity checks and visual inspections.

•Measurement: Using a multimeter to measure the current flowing through the circuit under different conditions.

**4. Components Used:**

•Lamp (Incandescent or LED)

•Switch (Toggle or Push-button)

•Connecting Wires

•Multimeter (for current measurement)

**5. Circuit Design and Implementation:**

The circuit comprised of a lamp connected in series with a switch, powered by a DC voltage source (e.g., battery). The switch controlled the flow of current through the circuit, allowing the lamp to be turned on and off as desired. The circuit was designed to be simple yet illustrative of basic electrical concepts.

**6. Measurement of Current:**

Current measurement was performed using a multimeter configured in series with the circuit. The multimeter was set to measure current (in Amperes), and the probes were connected in series with the circuit to measure the current flowing through it. Measurements were taken with the switch both open and closed to observe changes in current flow.

**7. Apparatus:**

•Lamp

•Switch

•Connecting Wires

•DC Voltage Source (Battery)

•Multimeter

**8. Procedure:**

1. Gather all the necessary components for the circuit.

2. Sketch the circuit diagram, indicating the connections between the components.

3. Assemble the circuit on the , ensuring proper connections and component orientation.

4. Test the continuity of the circuit to verify proper wiring.

5. Power the circuit using the DC voltage source and observe the behavior of the lamp when the switch is toggled.

6. Measure the current flowing through the circuit with the switch both open and closed using the multimeter.

**9. Results and Analysis:**

The measurements obtained demonstrated the relationship between voltage, current, and resistance in the circuit. The current flowing through the circuit was found to be dependent on the applied voltage and the resistance of the lamp. Analysis of the data provided insights into the behavior of simple electrical circuits.

**10. Conclusion:**

In conclusion, the project provided valuable hands-on experience in the design, construction, and measurement of electrical circuits. By working collaboratively as a team, students gained practical knowledge that complemented their theoretical understanding of electrical engineering principles. This project served as a foundation for further exploration and experimentation in the field of electrical and electronics engineering.

**11. References:**

•Textbooks on Basic Electrical and Electronics Engineering

•Online resources and tutorials on circuit design and measurement techniques

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This comprehensive project report provides detailed information about the design, implementation, and measurement of an electrical circuit with a lamp and a switch. It includes the team members' names and roll numbers, as well as a thorough discussion of the project's objectives, methodology, results, apparatus, and procedure. Additionally, a detailed conclusion summarizes the key findings and implications of the project.