

**LAB#14**

**APPLIED PHYSICS LAB**

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**Norton’s Theorem**

**Lab Task:**

**Verification:**

| **S.**  **No.** | **Source**  **voltage**  **(Volt)** | **Measurements in**  **Original Circuit** | | **Norton Equivalent Values** | | | **Measurements in Norton Equivalent Circuit** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **V 12**  **(V)** | **I12**  **(A)** | **In**  **(A)** | **Rn (Ω)** | **V n = I n x R n**  **(V)** | **V 12**  **(V)** | **I12**  **(A)** |
| **1.** | **30** | **12.4** | **1.224** | **3.1579** | **6.33** | **19.989** | **12.25** | **1.225** |
| **2.** | **20** | **12.4** | **1.224** | **2.1053** | **6.33** | **19.989** | **12.25** | **1.225** |
| **3.** | **10** | **12.4** | **1.224** | **1.0526** | **6.33** | **19.989** | **12.25** | **1.225** |

**Original Circuit:**

Diagram

Description automatically generated

**Shorting A-B Terminal:**

We shorted the point AB and then total resistance was found(by Resistance laws).

Diagram

Description automatically generated

Graphical user interface

Description automatically generated

**Total current:**

Total current was found(by V=IR formula).

Diagram

Description automatically generated

**Current at point A and B:**

Current across AB was found(by using parallel current formula) Battery source

was removed and Norton resistance was found.

Diagram

Description automatically generated with medium confidence

**Norton Resistance:**

Current result across AB and Norton resistance and the shorted resistance(across which

current was to be found) were put in parallel

Diagram

Description automatically generated

**Norton Equivalent Circuit**

This was Norton Equivalent total current was found by parallel current law. This is our required Current.

Schematic

Description automatically generated with low confidence

**VOLTAGE 20V:**

**Total current:**

We shorted the point AB and then total resistance was found(by Resistance laws).

Diagram

Description automatically generatedGraphical user interface

Description automatically generated

**VOLTAGE 10V:**

**Total current:**

We shorted the point AB and then total resistance was found(by Resistance laws).

Box and whisker chart

Description automatically generated with medium confidenceGraphical user interface

Description automatically generated

**Current at point A and B:**

Current across AB was found(by using parallel current formula) Battery source

was removed and Norton resistance was found.

Schematic

Description automatically generated with medium confidenceGraphical user interface

Description automatically generated

**Current at point A and B:**

Current across AB was found(by using parallel current formula) Battery source

was removed and Norton resistance was found.

Chart, timeline

Description automatically generated with medium confidenceGraphical user interface

Description automatically generated