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| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **I/II** |
| **Date of Performance:** |  | **Batch No:** | **G3** |
| **Faculty Name:** | **Milind Marathe** | **Roll No:** | **16010421063** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 25** |

**Experiment No: 3**

**Title:** **Thevenin’s Theorem & Norton’s Theorem.**

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| **Aim and Objective of the Experiment:** |
| * To Verify for Thevenin’s Theorem for the circuit * To Verify Norton Theorem for the Circuit. |

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| **COs to be achieved:** |
| **CO1:** Analyze resistive networks excited by DC sources using various network theorems.. |

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| **Circuit Diagram/ Block Diagram:** |
| **Circuit Diagram**  **Task 1: Circuit Diagram to measure VTh:**    **Task 2: Circuit Diagram to measure Isc=IN:**    **Task 3: Circuit Diagram to measure Rth=RN:** |

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| **Stepwise-Procedure:** |
| **Thevenin’s Theorm**  1. Connect the circuit as shown in the circuit diagram.  2. Set V1, V2 and measure open circuit voltage VTh across load terminals A and B.  3. Replace all voltage sources by Short circuit and measure RTh across terminals A and B as per the circuit diagram shown in the figure.  4. Draw Thevenin’s equivalent circuit and determine the value of load current from it.  5. Verify the results theoretically.  **Norton’s Theorem**  1. Connect the circuit as shown in the circuit diagram.  2. Set the voltages V1, V2  3. Remove the load resistance and measure the short circuit current ISC through A and B terminals.  4. Replace all the voltage sources by Short circuit and measure RTh across terminals A and B as per the circuit diagram shown in the figure.  5. Draw Norton’s equivalent circuit and determine the value of load current.  6. Verify the results theoretically |

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| **Observation Table:** |
| |  |  | | --- | --- | |  | **IRL** | | **Practical value** | **0.23A** | | **Theoretical value** | **0.23A** |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **Vth** | **Rth (Ω)** | **Isc (IN)** | **Irl**  **Thevenin** | **Irl ΩNorton** | | **Practical value** | **30.8** | **31.858** | **0.967A** | **0.23A** | **0.234A** | | **Theoretical value** | **30.805** | **31.857** | **0.9669A** | **0.2336A** | **0.2343A** |  |  |  | | --- | --- | | **Thevenin’s equivalent circuit** | **Norton’s Equivalent Circuit** |   Theoretical Calculation:  Vth:    Rth:    Isc:    IRL(Norton):    IRL(Thevenin): |

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| **Conclusion:** |
| In this experiment we understand the use of Thevenin and Norton’s theorem to get the value of **IRL** in the circuit. |

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| **Signature of faculty in-charge with Date:** |