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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: correct** |
| **Circuit Diagram**  **Task 1: Circuit Diagram to measure VTh:**    **Task 2: Circuit Diagram to measure Isc=IN:**    **Keep range of ammeter as mA for better accuracy, 3rd digit after decimal pt value you will get**  **Task 3: Circuit Diagram to measure Rth=RN:** |

**correct**

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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** | **0.23** |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **Vth** | **Rth (Ω)** | **Isc (IN)** | **Irl**  **Thevenin** | **Irl ΩNorton** | | **Practical value** | **30.8** | **31.858** | **0.97A** | **0.23A** | **0.23A** | | **Theoretical value** | **30.8** | **31.857** | **0.97A** | **0.23A** | **0.23A** |  |  |  | | --- | --- | | **Thevenin’s equivalent circuit**    **Resistance should be named as Rth. Keep Ammeter in series with RL to know load current in mA range.** | **Norton’s Equivalent Circuit**    **In Norton’s equivalent ckt current source is the equivalent and its value must be of Isc = 0.97 A. Again put Ammeter in series with RL to know load current in mA range** |   Theoretical Calculation:  Calculation of RTH=RN:      Voltage in Norton circuit:    **Theoretical calculations of Vth, Rth and Isc are not shown and then Load current calculation also not shown by any method KVL or KCL. That must tally with Meter readings in simulation.** |

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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:** |