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| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **II** |
| **Date of Performance:** | **13 / 03 / 2022** | **Batch No:** | **P1 - 2** |
| **Faculty Name:** | **Annu Abraham** | **Roll No:** | **16014022050** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 25** |

**Experiment No.: 4**

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

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| **Aim and Objective of the Experiment:** |
| * To Verify for Thevenin 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 RTH/RN:**    **Task 2: Circuit Diagram to measure VTH:**    **Task 3: Circuit Diagram to measure ISC:** |

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| **Stepwise-Procedure:** |
| **Thevenin’s Theorem:**   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 |
| **Sample Calculations:** |

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| **Observation Table:** |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **VTH**  **in volts** | **RTH / RN**  **in Ω** | **IN in mA** | **IL in mA** | | **Theoretical value** | 8.75 | 221.04 | 39.26 | 27.26 | | **Practical value** | 9.10 | 229.00 | 40 | 27.26 | |
| Screenshot of Output (Thevenin’s and Norton’s method): |
| |  |  | | --- | --- | | **Thevenin’s equivalent circuit:** | **Norton’s equivalent circuit:** | | **RTH/RN:** | **O/P for IL:** | |

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| **Conclusion:** |
| In conclusion, both Thevenin’s and Norton’s Theorem is verified by the experiment and all values are found using the same. |

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