| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **I** |
| --- | --- | --- | --- |
| **Date of Performance:** | **15 / 11 / 2022** | **Batch No:** | **C2-2** |
| **Faculty Name:** | **Jyoti Varavedkar** | **Roll No:** | **16010122109** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 25** |

**Experiment No: 4**

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

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

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

| **Circuit Diagram/ Block Diagram:** |
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| **Circuit Diagram:**    **Task 1: Circuit Diagram to measure RTH/RN:**    **Task 2: Circuit Diagram to measure VTH:**    **Task 3: Circuit Diagram to measure ISC:** |

| **Stepwise-Procedure:** |
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| **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:** |

| **Observation Table:** |
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| |  | **VTH**  **In volts** | **RTH / RN**  **In Ω** | **IN in mA** | | --- | --- | --- | --- | | **Theoretical value** | **4.95** | **955** | **4.71** | | **Practical value** | **4.85** | **950** | **4.82** | |
| Screenshot of Output (Thevenin’s and Norton’s method): |
| | **Thevenin’s equivalent circuit:** | **Norton’s equivalent circuit:** | | --- | --- | | **RTH/RN :**  **950 ohms** | **O/P for IN:**  **4.82 mA** | |

| **Conclusion:** |
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| By this experiment we get to know about the Thevenin Theorem and Norton Theorem for the circuit. |

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