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|---------------------------------|---|---------------------|-------------|
| Course Name: | Elements of Electrical and Electronics Engineering | Semester: | I |
| Date of Performance: | | Batch No: | C5_1 |
| Faculty Name: | | Roll No: | 19 |
| Faculty Sign & Date: | | Grade/Marks: | / 25 |

Experiment No: 3

Title: Thevenin's Theorem & Norton's Theorem

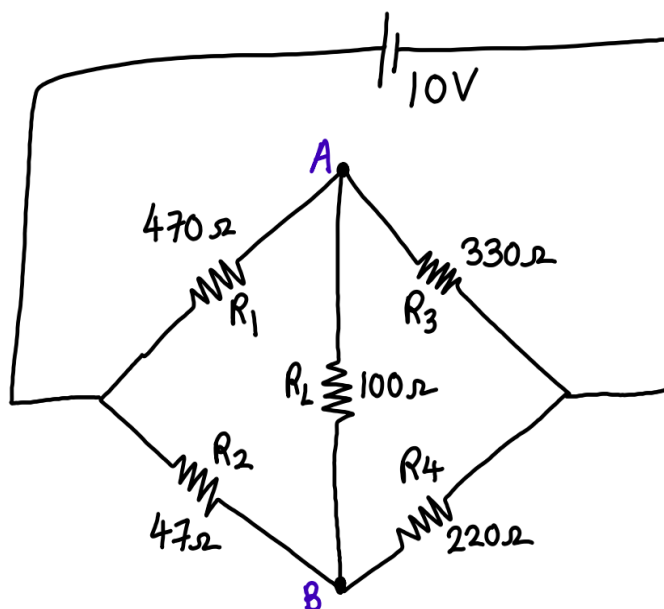
Aim and Objective of the Experiment:

- To Verify for Thevenin's Theorem for the circuit
- To Verify Norton Theorem for the Circuit.

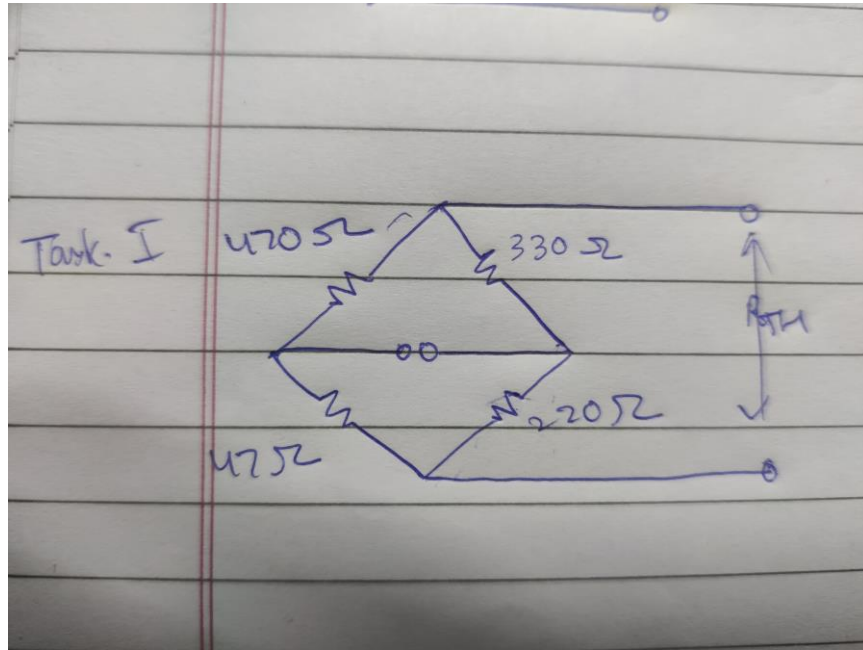
COs to be achieved:

CO1: Analyze resistive networks excited by DC sources using various network theorems.

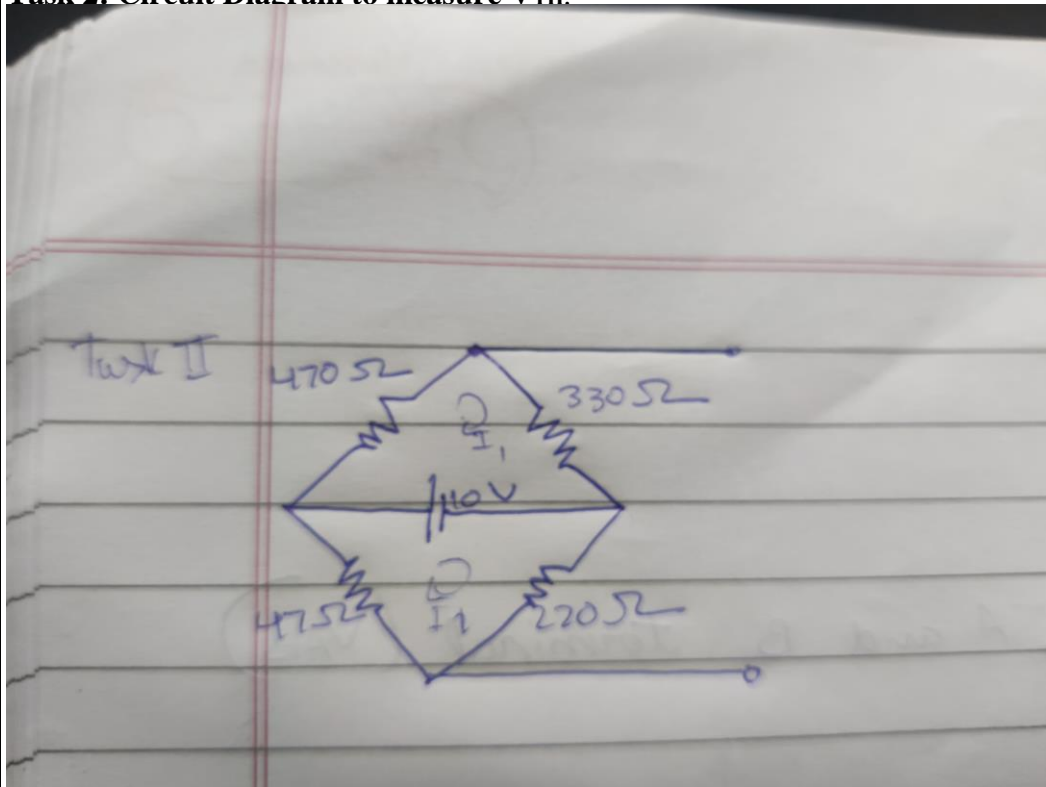
Circuit Diagram:



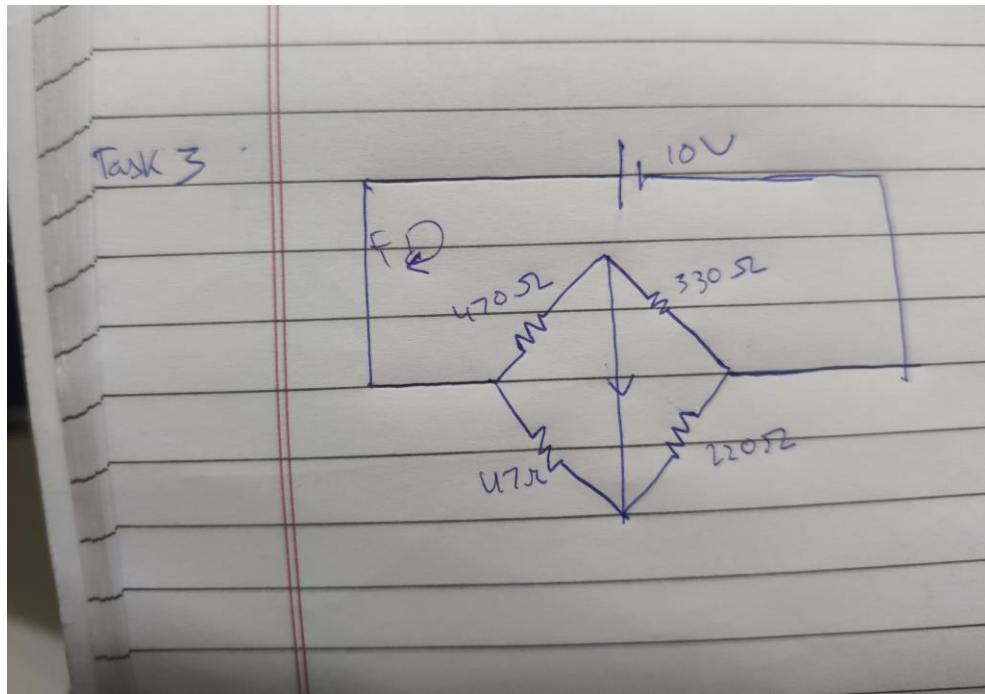
Task 1: Circuit Diagram to measure R_{TH}/R_N :



Task 2: Circuit Diagram to measure V_{TH} :



Task 3: Circuit Diagram to measure I_{sc} :



Stepwise-Procedure:

Thevenin's Theorem:

1. Connect the circuit as shown in the circuit diagram.
2. Set 10V and measure open circuit voltage V_{Th} across load terminals A and B.
3. Replace all voltage sources by Short circuit and measure R_{Th} 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 voltage 10V
3. Remove the load resistance and measure the short circuit current I_{sc} through A and B terminals.
4. Replace all the voltage sources by Short circuit and measure R_{Th} 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

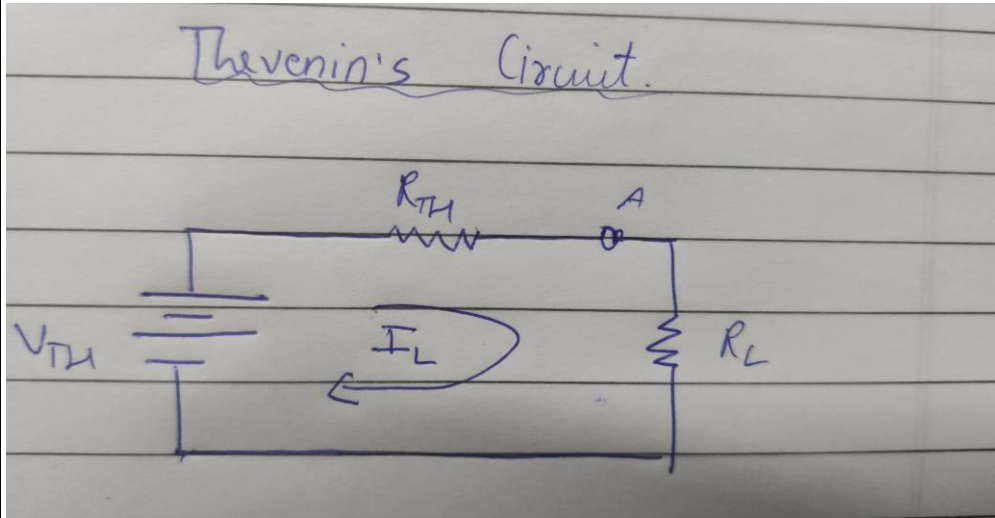
Calculations:

Learnt and verified Thevenin's Theorem & Norton's Theorem

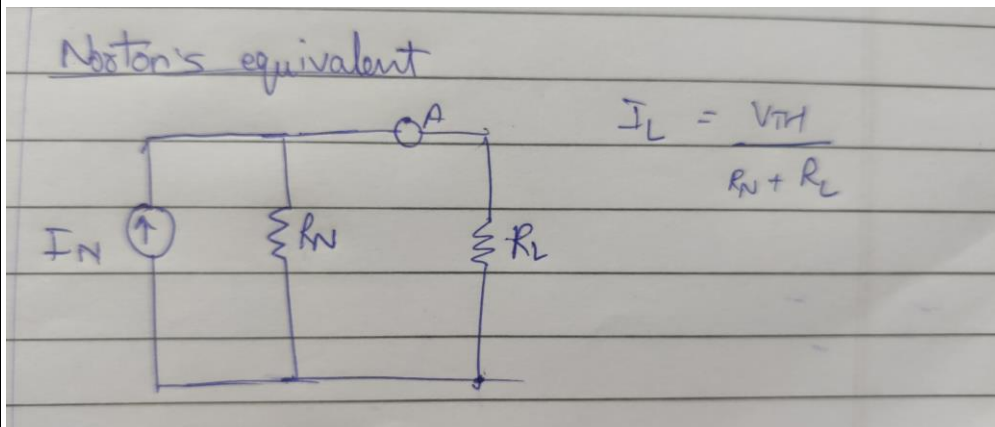
Observation Table:

| | V_{TH} (V) | R_{TH} / R_N (Ω) | I_N (mA) | I_L (mA) |
|--------------------------|--------------|-----------------------------|-------------|-------------|
| Theoretical value | 4.11 | 232.6 | 17.7 | 12.4 |
| Practical value | 4.1 | 233 | 17 | 11.8 |

Draw Thevenin's Equivalent circuit-:



Draw Norton's Equivalent circuit :-



Conclusion:

We learned the practical application of Thevenin's and Norton's theorems and also got to connect and verify the correct values of voltages, currents and resistances.



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Signature of faculty in-charge with Date: