## Lab Session 07 <br> Analyze and implement Thevenin's

## Thevenin's Theorem:

## Objective:

Verify Thevenin's theorem theoretically and practically for a given circuit

## Equipments and Components Required:

> DC Power supply
> Ammeter
$>$ Voltmeter
$>\quad$ Single dial decade resistance box
> Connecting wires

## Statement:

Any linear, bilateral network having a number of voltage, current sources and resistances can be replaced by a simple equivalent circuit consisting of a single voltage source in series with a resistance, where the value of the voltage source is equal to the open circuit voltage and the resistance is the equivalent resistance measured between the open circuit terminals with all energy sources replaced by their ideal internal resistances.

## Circuit Diagram:



Measurement of $\mathbf{V}_{\mathrm{TH}}$ or $\mathrm{V}_{\mathrm{OC}}$


Measurement of $\mathbf{R}_{\mathbf{T H}}$


Measurement of $\mathbf{I}_{\mathrm{L}}\left(\mathbf{I}_{\mathrm{L}}=\mathbf{V}_{\mathrm{TH}}\right.$ or $\left.\mathbf{V}_{\mathrm{OC}} / \mathbf{R}_{\mathrm{TH}}+\mathbf{R}_{\mathrm{L}}\right)$

## ROCEDURE:

1. Connect the circuit diagram as shown in fig.8.1
2. Measure current in $\mathrm{R}_{\mathrm{L}}$.
3. Connect the circuit as shown in fig8.2.
4. Measure open circuit voltage Voc by open circuiting terminals i.e, $\mathrm{V}_{\mathrm{TH}}$
5. Draw the Thevenin's equivalent circuit as shown in fig 8.3
6. Measurement current in $\mathrm{R}_{\mathrm{L}}$

TABULAR COLUMN:

| Parameters | $\mathbf{V}_{\mathbf{o c}}$ | $\mathbf{R}_{\mathbf{T H}}$ | $\mathbf{I}_{\mathbf{L}}$ |
| :--- | :--- | :--- | :--- |
| Theoretical Values |  |  |  |
| Practical Values |  |  |  |

Table 7.1

## PRECAUTIONS:

1. Check for proper connections before switching ON the supply
2. Make sure of proper color coding of resistors
3. The terminal of the resistance should be properly connected.

## Conclusions \& Comments:

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