JSPM's

**Rajarshi Shahu College of Engineering, Pune**

**Department of Electronics & Telecommunication Engineering**

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# INNOVATIONS IN TEACHING AND LEARNING

**Subject:** Electrical Network and Machines **Class:** S.Y. BTech E&TC

## NAME OF THE ACTIVITY: Verification of Network Theorems Activity

I. **Concept:** Students perform verification of fundamental electrical network theorems through experimental and simulation-based approaches. The theorems include Superposition Theorem, Thevenin's Theorem, Norton's Theorem, and Maximum Power Transfer Theorem. The activity aims to strengthen conceptual understanding of linear network analysis and provide hands-on experience in circuit behavior verification.

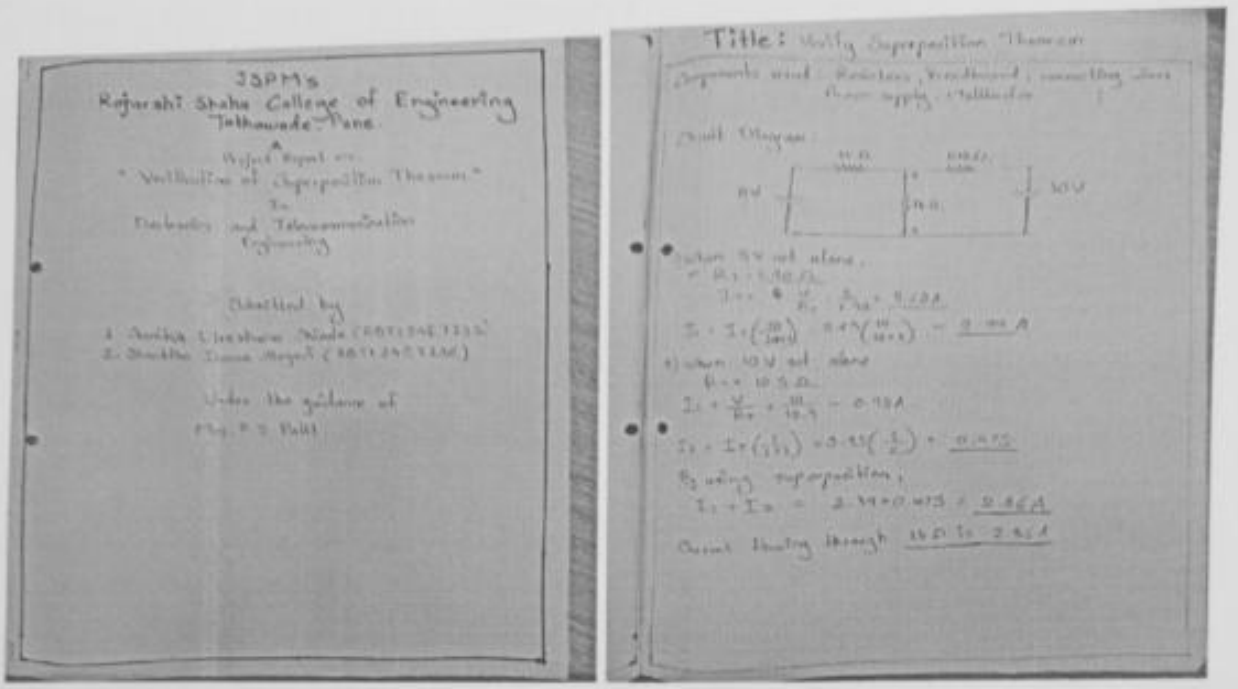
II. **Objectives (Goal):**

To apply theoretical network theorems to practical circuits.
To bridge the gap between circuit theory and real-world applications.
To encourage teamwork and experimental verification skills.

III. **Appropriateness (Relevance of Selected Method):** By verifying theorems experimentally, students can visualize circuit responses and validate theoretical predictions, reinforcing their learning through active experimentation.

IV. **Effective Presentation (Implementation Details):**

a. Students were divided into small groups.
b. Each group was assigned one of the theorems: Superposition, Thevenin, Norton, or Maximum Power Transfer.
c. The groups constructed the circuit on a breadboard.
d. They measured the voltage and current at specific nodes, compared experimental results with theoretical calculations, and recorded observations.
e. Each group presented their findings and discussed errors and practical challenges encountered during verification.



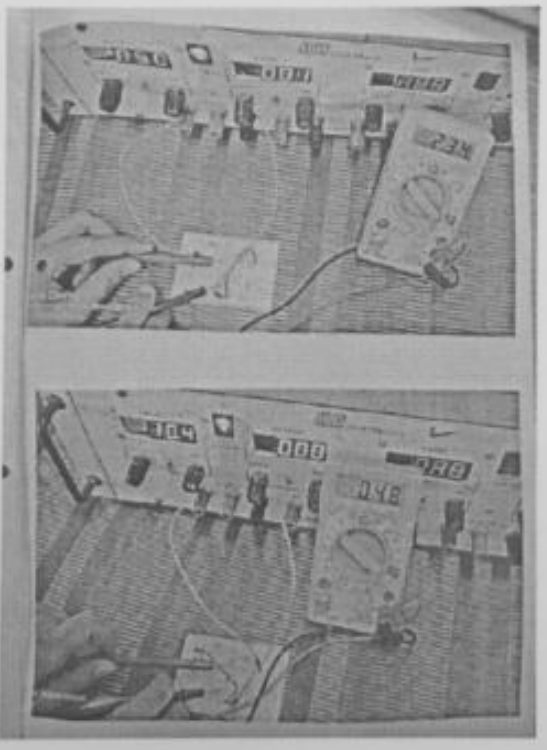



**Fig. Superposition Theorem Verified by Students**

## V. Results (Impact):

- Improved conceptual clarity of network theorems.
- Developed hands-on circuit building and testing skills.
- Increased student engagement and teamwork.
- Strengthened ability to correlate theoretical and practical results

## VI. Reproducibility and Reusability by Other Scholars for Further Development

| Sr.No | Innovation Used by | Details of User | Purpose of Reproducibility and Reusability |
|---|---|---|---|
| 1 | Faculty of Electrical and E&TC Department | S.Y. B.Tech Students | Activity can be repeated with variations in circuit configurations or theorem combinations to enhance conceptual depth. |

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