

**II Year I Semester**  
**17EE312**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

### **ELECTRICAL CIRCUITS LABORATORY - I**

**Course Objective:** To verify and demonstrate various theorms, locus diagrams, resonance and two port networks. To determine self and mutual inductance of a magnetic circuit, parameters of a given coil and measurement of 3- phase power.

**Note:** Any of the 10 experiments are to be conducted

1. Verification and simulation of Ohm's law.
2. Verification and simulation of Kirchhoff's laws.
3. Verification and simulation of Thevenin's and Norton's Theorems.
4. Verification and simulation of Superposition theorem and Reciprocity Theorems.
5. Verification and simulation of Maximum Power Transfer Theorem.
6. Verification and simulation of Compensation Theorem.
7. Verification and simulation of Millman's Theorem.
8. Generate locus Diagrams of RL and RC Series Circuits and verify the same using MATLAB/SIMULINK Software.
9. Verification of Series Resonance using hardware and MATLAB/SIMULINK Software.
10. Verification of Parallel Resonance using hardware and MATLAB/SIMULINK Software.
11. Determination of Self, Mutual Inductances and Coefficient of coupling.
12. Measurement of active power, power factor and reactive power of a 1- $\phi$  RLC circuit.
13. Obtain B-H curve of a magnetic material.

**Software Packed Used:**

1. MATLAB/Simulink 2017 (a) Licensed version

**Learning outcomes:**

Able to apply various theorms, determination of self and mutual inductances, two port parameters of a given electric circuits. Able to draw locus diagrams. Waveforms and phasor diagram for lagging and leading networks.

**Text books:**

1. Charles K. Alexander and Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", 5th Edition, Tata McGrawHill Publications, 2012.

**Reference books:**

1. M.E. Van Valkenburg , "Network Analysis", Prentice Hall of India Pvt Ltd.,3rd Edition, New Delhi.
2. Hayt and Kemmerly, "Engineering Circuit Analysis", Tata McGrawHill Publications, 7th Edition, 2007.