

## BEE151 / BEE251: BASIC ELECTRICAL ENGINEERING LAB

### LIST OF EXPERIMENTS

*Note: A minimum of ten experiments from the following should be performed.*

#### (A) Hardware based experiments

S.No.	Name of Experiments
1.	Verification of Kirchhoff's laws.
2.	Measurement of power and power factor in a single phase ac series inductive circuit and study improvement of power factor using capacitor.
3.	Study of phenomenon of resonance in RLC series circuit and obtain resonant frequency.
4.	Connection and measurement of power consumption of a fluorescent lamp (tube light).
5.	Measurement of power in 3- phase circuit by two wattmeter method and determination of its power factor for star as well as delta connected load.
6.	Determination of parameters of ac single phase series RLC circuit
7.	Determination of (i) Voltage ratio (ii) polarity and (iii) efficiency by load test of a single phase Transformer.
8.	Determination of efficiency of a dc shunt motor by load test
9.	To study running and speed reversal of a three phase induction motor and record speed in both directions
10.	Demonstration of cut-out sections of machines: dc machine, three phase induction machine, single phase induction machine and synchronous machine.

#### (B) Experiments available on virtual lab

S.No.	Name of Experiments
1.	<b>Kirchhoff's laws.</b> Virtual lab link: <a href="http://vlab.amrita.edu/?sub=3&amp;brch=75&amp;sim=217&amp;cnt=2">http://vlab.amrita.edu/?sub=3&amp;brch=75&amp;sim=217&amp;cnt=2</a>
2.	<b>Thevenin Theorem.</b> Virtual lab link: <a href="https://vlab.amrita.edu/?sub=1&amp;brch=75&amp;sim=313&amp;cnt=1">https://vlab.amrita.edu/?sub=1&amp;brch=75&amp;sim=313&amp;cnt=1</a>
3.	<b>RLC series resonance.</b> Virtual lab link: <a href="https://vlab.amrita.edu/?sub=1&amp;brch=75&amp;sim=330&amp;cnt=1">https://vlab.amrita.edu/?sub=1&amp;brch=75&amp;sim=330&amp;cnt=1</a>
4.	<b>Measurement of power in 3- phase circuit by two wattmeter method and determination of its power factor for star as well as delta connected load.</b> Virtual lab link: <a href="http://vp-dei.vlabs.ac.in/Dreamweaver/measurement.html">http://vp-dei.vlabs.ac.in/Dreamweaver/measurement.html</a>
5.	<b>Determination of parameters of ac single phase series RLC circuit.</b> Virtual lab link: <a href="https://vlab.amrita.edu/?sub=1&amp;brch=75&amp;sim=332&amp;cnt=1">https://vlab.amrita.edu/?sub=1&amp;brch=75&amp;sim=332&amp;cnt=1</a>
6.	<b>To observe the B-H loop of a ferromagnetic material in CRO. Virtual lab link:</b> <a href="https://vlab.amrita.edu/?sub=1&amp;brch=282&amp;sim=1507&amp;cnt=2">https://vlab.amrita.edu/?sub=1&amp;brch=282&amp;sim=1507&amp;cnt=2</a>
7.	<b>Determination of the efficiency of a dc motor by loss summation method (Swinburne's test).</b> Virtual lab link: <a href="http://em-iitr.vlabs.ac.in/exp5/index.php?section=Theory">http://em-iitr.vlabs.ac.in/exp5/index.php?section=Theory</a>

## **List of Major Equipment in Basic Electrical Engineering Lab**

- Kit for Resonant Frequency Measurement
- Kit for Verification of KVL & KCL
- Three phase Induction Motor
- Single phase Transformers
- Cut out sections of Slip Ring Induction Motor
- Cut out sections of DC Shunt Motor
- Cut out sections of Single phase Squirrel Cage Induction motor
- Setup for observation of B-H curve in ferromagnetic material with CRO
- Setup for analysing efficiency of DC Shunt motor by Load test
- Setup Determination of parameters of AC Single phase series RLC circuit
- Setup for analysing power consumption of Fluorescent Lamp
- 1-Phase Autotransformers
- 3-Phase Autotransformers
- Inductive load bank
- Capacitive load bank
- DC Shunt Motor
- DOL Starter
- Single Phase Resistive and Inductive Load
- Function Generator