

Department of Electrical Engineering

Applied Electricity Laboratory

HISTORY AND LOCATION

Applied Electricity Laboratory is situated in the Main Block of University of Engineering and Technology, Lahore.

It was constructed as part of Maclagan Engineering College in 1923 when Sir Edwards Maclagan, the then Governor of the Punjab, laid the foundation stone of the building, now called the Main Block, which still retains its majesty in spite of the wear and tear of over eight decades. At that stage the institution offered courses of study in two disciplines, namely Electrical and Mechanical Engineering.

Now left wing of Main Block houses laboratories and lecture theaters of Electrical Engineering Department and right wing has Mechanical Engineering Department laboratories and lecture theaters.



Figure 1: Main Block

OBJECTIVE

This laboratory is used to give an understanding of basic electrical engineering concepts to the students of following Departments.

- Mechanical Engineering
- Civil Engineering
- Chemical Engineering
- Geological Engineering
- Mining Engineering
- Petroleum Engineering
- Metallurgical Engineering
- Industrial and Manufacturing Engineering
- Environmental Engineering
- Transportation Engineering

Students are introduced to electrical components like resistors, capacitors and inductors and their relationship with frequency in AC circuits.

Properties of single phase and three phase circuits are studied through experiments.

Students are also introduced to electric machines like generators and transformers through experiments which show the important characteristics of these machines.

LAB STAFF

- SADIQ HUSSAIN
Junior Demonstrator
- M.SADDIQUE
Laboratory Assistant
- MOAZIZ. A.K
Switch Board Attendant

EQUIPMENT

- Ammeters
- Voltmeters
- Watt Meters
- Oscillators
- DC Power Supplies
- 3 Phase Supplies
- Inductors
- Capacitors
- Resistors
- Lamp – Boards
- Oscilloscopes
- Transformer
- LUX Meter
- DC Series Generator with Driving Motor
- Sliding Resistance
- DC Series Generators with Driving Motors
- Water-Rheostat



Figure 2: 3-Phase Supply and Lamp- Boards

LIST OF EXPERIMENTS

- To draw the vector diagrams of A.C circuits containing:-
 - I. Resistance and inductance in series.
 - II. Resistance and capacitance in series.
 - III. Resistance, inductance and capacitance in Series
- To study the effect of variation of frequency on an L-R-C series resonant circuit.
- To measure the power in an inductive load by using one voltmeter and one ammeter method.



Figure 3: Apparatus of one of the

Experiments

- Power measurement in a 3-phase star connected balanced resistive load by two wattmeter method and verify the following relations:-

I. Line voltage = $\sqrt{3}$ Phase Voltage

II. The current in the neutral conductor is zero

III. Sum of two wattmeter reading = Total power in the circuit

- To plot the load characteristics of a DC shunt generator.
- Determine the magnetic characteristics of a DC shunt generator.
- Load characteristics curves of a series generator.
- To find voltage regulation of a single phase transformer

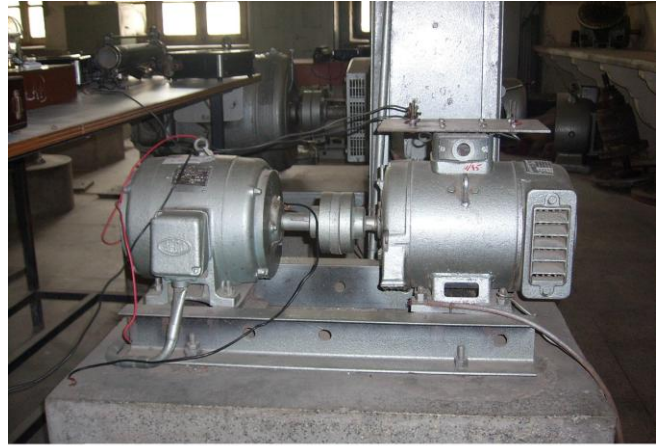


Figure 3: DC Shunt Generator with Driving Motor

