

**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY
(For ME Only)**

Preamble It is an introductory laboratory course which emphasizes the practical Investigations on fundamental concepts of dc machines, ac machines and Semiconductor devices.

Course Objectives:

1. To predetermine the efficiency of DC shunt machine using Swinburne's test.
2. To predetermine the efficiency and regulation of 1 phase transformer with O.C. & S.C. tests.
3. To obtain the performance characteristics of DC shunt motor & 3 phase induction motor.
4. To find out regulation of an alternator with synchronous impedance method.
5. To control speed of DC shunt motor using speed control methods.
6. To find out the characteristics of PN junction diode & transistor
7. To determine ripple factor of half wave & full wave rectifiers

Course Outcomes

1. Identify various electrical measuring instruments, equipment and tools and their usage.
2. Analyse, measure, interpret and validate the practical observations by applying the fundamental knowledge of electrical circuits on ac machines, dc machines and Electronic devices
3. Design amplifier, voltage summer and integrator circuits for desired Specifications.
4. Design circuit for speed control of dc shunt motor and three phase induction motor For desired speed.

List of Experiments:

- i. Swinburne's Test on a DC Shunt Machine and Predetermination of Efficiency as Generator and Motor.
- ii. Open Circuit and Short Circuit Tests on Single Phase Two Winding Transformer.
- iii. Brake test on three phase induction motor.
- iv. Regulation of alternator by synchronous impedance method.
- v. Speed control of DC shunt motor by a) Armature control b) Field control.
- vi. Brake test on DC shunt motor.
- vii. Characteristics of PN junction diode
- viii. Characteristics of Transistor
- ix. VI Characteristics of PN and Zener Diodes.
- x. determine ripple factor of half wave & full wave rectifiers

Reference Books:

1. P.S.Dhokal, Basic Practicals in Electrical Engineering, Standard Publishers, 2004.
2. Yannis Tsvividis, A First Lab in Circuits and Electronics, Wiley, 1st edition, 2001.