



# SANTHIRAM ENGINEERING COLLEGE, NANDYAL

Department of Electrical and Electronics Engineering

**Name of the Laboratory:** ELECTRICAL MACHINES LABORATORY – I

**Regulation:** R15

**Branch:** Electrical and Electronics Engineering

**Year & Sem:** II- II

## Course Objectives

- No load and load characteristics of DC generators
- Various tests on DC motors
- The speed control techniques of DC motors

## Course Outcomes

- Conduct experiments to obtain the no-load and load characteristics of D.C. Generators
- Conduct tests on D.C. motors for predetermination of efficiency
- Conduct tests on D.C. motors for determination of efficiency
- Control the speed of D.C. motor in a given range using appropriate method
- Identify the reason as to why D.C. Generator is not building up voltage.

## List of Experiments

1. Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.
2. Load test on DC shunt generator. Determination of characteristics.
3. Brake test on DC shunt motor. Determination of performance curves.
4. Load test on DC compound generator. Determination of characteristics.
5. Hopkinson's tests on DC shunt machines. Predetermination of efficiency.
6. Fields test on DC series machines. Determination of efficiency.
7. Swinburne's test and speed control of DC shunt motor. Predetermination of efficiencies.
8. Brake test on DC compound motor. Determination of performance curves.

**NOTE:** In addition to the above eight experiments, at least any two of the experiments from the following list are required to be conducted.

1. Load test on DC series generator. Determination of characteristics.
2. Retardation test on DC shunt motor. Determination of losses at rated speed.
3. Separations of losses in DC shunt motor.

## List of Equipments

1. DC. Shunt Motor Set
2. DC. Compound Motor Set
3. DC Shunt Motor Coupled to 5 Hp, 220 V, 1500 RPM DC Shunt Generator
4. 5 Hp DC Series Motor Coupled to 3 KW, 220 V, 1500 RPM, DC Generator
5. 5 Hp DC Compound Motor Coupled to 3 KW, 220 V, 1500 RPM, DC Generator with Base Plate & Copupling
6. 5 Hp DC Shunt Motor Coupled to 3 KW, 220 V, 1500 RPM DC Series Generator with Base Plate & Coupling
7. 5 Hp DC Series Motor Coupled to 3 KW, 220 V, 1500 RPM, DC Generator with Load Test.



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