

MAJOR EQUIPMENT

Course Code: EE3311 Course Title: ELECTRICAL MACHINES LABORATORY – I Subject Incharge: T.Kannan		
Sl.No.	Description of Equipment	Required numbers (for batch of 30 students)
1	DC Shunt Motor with Loading Arrangement	3
2	DC Shunt Motor Coupled With Three phase Alternator	1
3	DC Series Motor with Loading Arrangement	1
4	DC Compound motor with loading arrangement	1
5	DC Shunt Motor Coupled With DC Compound Generator	2
6	DC Shunt Motor Coupled With DC Shunt Generator	1

MINOR EQUIPMENT

Course Code: EE3311 Course Title: ELECTRICAL MACHINES LABORATORY – I Subject incharge: T.Kannan		
Sl.No.	Description of Equipment	Required numbers (for batch of 30 students)
1	Single Phase Transformer	4
2	Tachometer -Digital/Analog	8
3	Single Phase Auto Transformer	2
4	Three Phase Auto Transformer	1
5	Single Phase Resistive Loading Bank	2
6	Three Phase Resistive Loading Bank	2
	Rheostats	As per the requirement for the machines



SAFETY MEASURES

- **General Rules of Conduct in Laboratories are displayed.**
 - **Specific Safety Rules for students are displayed.**
 - **Fire Extinguisher and First aid kit are regularly inspected and restocked as necessary.**
 - **All electrical wires are protected by using MCB.**
 - **Well trained technical supporting staff.**
 - **Periodical servicing of the lab equipments.**
 - **Maintaining a clean and organized laboratory.**
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CO4	-	3	3	3	-	-	-	1.5	-	-	3	-	-	3	3
CO5	-	-	-	-	3	-	-	1.5	-	-	-	-	-	3	3
CO6	-	-	-	-	3	-	-	1.5	-	-	-	-	-	3	3
CO7	-	-	-	-	3	-	-	1.5	-	-	3	-	-	3	3
CO8	-	-	-	-	3	-	-	1.5	-	-	3	-	-	3	3
Avg	-	3	2.7	3	3	-	-	1.5	-	-	3	-	-	3	3

EE3311

ELECTRICAL MACHINES LABORATORY - I

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COURSE OBJECTIVES:

- To expose the students to determine the characteristics of DC machines and transformers by performing experiments on these machines.
- To provide hands on experience to evaluate the performance parameters of DC machines and transformer by conducting suitable tests.

LIST OF EXPERIMENTS:

1. Open circuit and load characteristics of DC shunt generator- calculation of critical resistance and critical speed.
2. Load characteristics of DC compound generator with differential and cumulative connections.
3. Load test on DC shunt motor.
4. Load test on DC compound motor.
5. Load test on DC series motor.
6. Swinburne's test and speed control of DC shunt motor.
7. Hopkinson's test on DC motor – generator set.
8. Load test on single-phase transformer and three phase transformers.
9. Open circuit and short circuit tests on single phase transformer.
10. Sumpner's test on single phase transformers.
11. Separation of no-load losses in single phase transformer.
12. Study of starters and 3-phase transformers connections.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

At the end of the course students will be able to:

- CO1: Construct the circuit with appropriate connections for the given DC machine/transformer.
- CO2: Experimentally determine the characteristics of different types of DC machines.
- CO3: Demonstrate the speed control techniques for a DC motor for industrial applications.
- CO4: Identify suitable methods for testing of transformer and DC machines.
- CO5: Predetermine the performance parameters of transformers and DC motor.
- CO6: Understand DC motor starters and 3-phase transformer connections.

MAPPING OF COs WITH POs AND PSOs