

# **KEE-151 Electrical Engineering Laboratory**

## **List of Experiment**

Note: Minimum 10 experiments are to be performed from the following list:

1. Verification of Kirchhoff's laws
2. Verification of Superposition and Thevenin Theorem
3. Measurement of power and power factor in a single phase ac series inductive circuit and study improvement of power factor using capacitor
4. Study of phenomenon of resonance in RLC series circuit and obtain resonant frequency.
5. Connection and measurement of power consumption of a fluorescent lamp (tube light).
6. 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.
7. Determination of parameters of ac single phase series RLC circuit
8. To observe the B-H loop of a ferromagnetic material in CRO.
9. Determination of (i) Voltage ratio (ii) polarity and (iii) efficiency by load test of a single phase transformer.
10. Determination of efficiency of a dc shunt motor by load test.
11. To study running and speed reversal of a three phase induction motor and record speed in both directions.

## REE452: ELECTRICAL MACHINES-1

LAB Note: Minimum ten experiments are to be performed from the following list, out of which there should be at least two software based experiments.

1. To obtain magnetization characteristics of a DC shunt generator.
2. To obtain load characteristics of a DC shunt generator and compound generator (a) Cumulatively compounded (b) Differentially compounded.
3. To obtain efficiency of a DC shunt machine using Swinburne's test.
4. To perform Hopkinson's test and determine losses and efficiency of DC machine.
5. To obtain speed-torque characteristics of a DC shunt motor.
6. To obtain speed control of DC shunt motor using (a) armature resistance control (b) field control
7. To obtain speed control of DC separately excited motor using Ward-Leonard.
8. To obtain equivalent circuit, efficiency and voltage regulation of a single phase transformer using O.C. and S.C. tests.
9. To obtain efficiency and voltage regulation of a single phase transformer by Sumpner's test.
10. To obtain 3-phase to 2-phase conversion by Scott connection.
11. To determine excitation phenomenon (B.H. loop) of single phase transformer using C.R.O.
12. To demonstrate the parallel operation of three phase Transformer and to obtain the load sharing at a particular load. Institute may add any two software based experiments [Develop Computer Program in 'C' language or use MATLAB or Electrical Domain Simulation Software: "Virtual HIL Device" (Free, Unlimited Users, Full Version) from Typhoon HIL GmbH or Ethe above list.

## KEE553 ELECTRICAL MACHINE-II LABORATORY

Note: Minimum 10 experiments are to be performed from the following list:

1. To perform no load and blocked rotor tests on a three phase squirrel cage induction motor and determine equivalent circuit.
2. To perform load test on a three phase induction motor and draw Torque -speed characteristics
3. To perform no load and blocked rotor tests on a single phase induction motor and determine equivalent circuit.
4. To study speed control of three phase induction motor by varying supply voltage and by keeping V/f ratio constant.
5. To perform open circuit and short circuit tests on a three phase alternator.
6. To determine V-curves and inverted V-curves of a three phase synchronous motor.
7. To determine the direct axis reactance ( $X_d$ ) and quadrature axis reactance ( $X_q$ ) of synchronous machine.
8. To study synchronization of an alternator with the infinite bus by using: (i) dark lamp method (ii) two bright and one dark lamp method.
9. To determine speed-torque characteristics of three phase slip ring induction motor and study the effect of including resistance, or capacitance in the rotor circuit.
10. To determine speed-torque characteristics of single phase induction motor and study the effect of voltage variation.
11. To determine speed-torque characteristics of a three phase induction motor by (i) keeping v/f ratio constant (ii) increasing frequency at the rated voltage.
12. To draw O.C. and S.C. characteristics of a three phase alternator from the experimental data and determine voltage regulation at full load, and unity, 0.8 lagging and leading power factors.
13. To determine steady state performance of a three phase induction motor using equivalent circuit.
14. Load Test on Three Phase Alternator. \*The available experiments from above list may be performed on virtual lab on following virtual lab link:<http://vlab.co.in/>









Department: **Electrical Engineering**  
Inventory of Room No./Office: Machine Lab I

SR. NO	PRODUCT	PRODUCT DESCRIPTION	QUANTITY	REMARK (IF ANY)
1.	O.C & S.C TEST ON 3 - PHASE TRANSFORMER	TRANSFORMER	1	WORKING
2.	TO STUDY 3 – PHASE TO 2 – PHASE CONVERSION BY SCOTT CONNECTION	TRANSFORMER	1	WORKING
3.	SPEED CONTROL OF DC SHUNT MACHINE USING WARD LEONARD METHOD	RHEOSTAT	1	WORKING
4.	O.C & SC TEST ON SINGLE PHASE TRANSFORMER	TRANSFORMER	1	WORKING
5.	VOLTAGE RATIO, POLARITY AND EFFICIENCY OF A SINGLE PHASE TRANSFORMER	TRANSFORMER	2	WORKING
6.	TO OBTAIN EFFICIENCY & REGULATION OF A SINGLE PHASE TRANSFORMER BY SUMPNER'S TEST (BACK TO BACK)	TRANSFORMER, WATMETER	1	WORKING
7.	SPEED CONTROL DC SHUNT MOTOR ( ARMATURE & FIELD RESISTANCE)	MOTOR, RHEOSTAT	1	WORKING
8.	DC SHUNT MACHINE USING SWINBURNE'S TEST	MOTOR	1	NOT WORKING
9.	HOPKINSON'S TEST DC SHUNT MACHINE	2 GENERATOR	1	WORKIING
10.	LOAD TEST DC SHUNT GENERATOR	GENERATOR, MOTOR	1	NOT WORKING
11.	LOAD TEST ON DC COMPOUND GENERATOR	GENERATOR, MOTOR	1	WORKING
12.	Box light	Bajaj, dual road	20	
13.	Fan	Bajaj, 1200mm, 3 blade	10	ALL WORKING

RAJKIYA ENGINEERING COLLEGE, AMBEDKAR NAGAR

INVENTORY SHEET

DEPARTMENT: ELECTRICAL ENGINEERING

INVENTORY OF ROOM NO./OFFICE: MACHINE LAB II

SR.NO	PRODUCT	PRODUCT DISCRIPTION	QUANTITY	REMARK (IF ANY)
1.	NO LOAD & BLOCK ROTOR TEST ON SINGLE PHASE INDUCTION MOTOR	MOTOR WATTMETER,	1	WORKING
2.	STUDY OF SPEED CONTROL OF THREE PHASE INDUCTION MOTOR	MOTOR, 2 WATTMETER, AUTOTRANSFORMER	1	WORKING
3.	SPEED CONTROL OF THREE PHASE INDUCTION MOTOR BY VARYING SUPPLY	MOTOR	1	WORKING
4.	V-CURVE & INVERTED V-CURVE OF A THREE PHASE SYNCHRONOUS MOTOR	MOTOR, GENERATOR, RHEOSTAT	1	WORKING
5.	$X^D$ AND $X^O$ AT THREE PHASE SYNCHRONOUS MACHINE	MOTOR, GENERATOR, RHEOSTAT	1	WORKING
6.	OPEN CIRCUIT & SHORT CIRCUIT TEST ON THREE PHASE ALTERNATOR	MOTOR, GENERATOR, RHEOSTAT	1	WORKING
7.	TACHOMETER	RPM/MPM	4	3 NOT WORKING
8.	MULTIMETER		2	WORKING

# RAJKIYA ENGINEERING COLLEGE, AMBEDKAR NAGAR

## INVENTORY SHEET

DEPARTMENT : ELECTRICAL ENGINEERING

INVENTORY OF ROOM NO./OFFICE: BASIC ELECTRICAL LAB

SR.NO	PRODUCT	QUANTITY	REMARK (IF ANY)
1.	Logic gate trainer kit	2	WORKING
2.	RLC trainer Kit	2	WORKING
3.	Kirchhoff trainer kit	2	One working
4.	Two watt meter method power and power factor measurement with 3phase xmer trainer kit	2	WORKING
5.	Network theorems verification trainer kit	2	WORKING
6.	Bread board with trainer kit	5	WORKING
7.	Transistor as switch trainer kit	2	WORKING
8.	CRO	3	WORKING
9.	Full wave & half wave rectifier trainer kit	2	WORKING
10.	DC regulated power supply system	5	WORKING
11.	Power & power factor of single phase inductive load	2	WORKING
12.	single phase Energy meter Panel	02	WORKING

