

## Electrical Engineering Department

### 1. Electrical machine LAB


List of major equipment (Costing more than ₹ 50,000)



- DC shunt motor and dc series generator set.
- DC shunt motor and dc shunt generator set.
- DC power rectifier unit.
- Synchronous Motor Withdc Shunt Generator Set
- Powerman Honda Portable Generato
- D.G. Set-50 KVA



#### List of experimental set up

- Direct Loading test on 3-phase Alternator.
- O.C. & S.C. test & Direct Loading test on Alternator.
- To plot V Curves & Load test on Synchronous motor.
- Load test on Synchronous induction motor.
- O.C. & S.C. test on 1-phase Transformer.
- Study of 3-phase transformer & Scott connection.
- Measurement of active- reactive power by 1,2,3 Wattmeter method.
- Speed control of Dc Shunt motor.
- Speed control of Dc Series motor.
- Speed control & Rheostatic Baking of 3-phase I.M.
- Load test on 3-phase slip-ring I.M
- Load test on 1-phase Induction Motor.
- Rheostatic Braking & load test on D.C. Shunt Motor.



<ul style="list-style-type: none"> <li>• SCOTT Connection of 1-phase transformer with load &amp; without load.</li> <li>• Different connection of three transformer</li> </ul>	
<b>2. Electrical Measurement LAB</b>	
List of major equipment (Costing more than ₹ 50,000)	<ul style="list-style-type: none"> <li>• P.T.testing set complet with bridge std. P.T.</li> <li>• C.T.testing set complete with bridge std.C.T. and</li> <li>• Burden box</li> <li>• Epstine square set mounted on board.</li> <li>• 3 phase shifting transformer 1KVA p.f. selected 0-1.</li> </ul>
<b>List of experimental set up</b>	
<ul style="list-style-type: none"> <li>• Measurement of power in 3 phase 4 wire circuit.</li> <li>• Calibration of single phase energymeter at different p.f.</li> <li>• Use of D.C. potentiometer for calibration of ammeter and voltmeter.</li> <li>• Anderson’s bridge.</li> <li>• Epstine square.</li> <li>• Measurement of earth resistance.</li> <li>• Strain measurement using strain gauge.</li> <li>• Study of LVDT.</li> <li>• Temperature measurement by RTD /Termister</li> <li>• Termocouple.</li> <li>• Study of Pressure transducers.</li> <li>• Study of recorders.</li> <li>• Study of different types of CRO”S &amp;their application</li> <li>• Measurement of systematic error of</li> </ul>	

wattmeter.	
<b>3. Electrical Engineering Materials LAB</b>	
List of major equipment (Costing more than ₹ 50,000)	Oil Testing set ( 0-60 kv)
<b>List of experimental set up</b>	
<ul style="list-style-type: none"> <li>• Testing of insulating oil as per IS.</li> <li>• Testing of Solid insulating Material as per IS.</li> <li>• Measurement of resistivity of resistance material.</li> <li>• Measurement of resistivity of conductive material.</li> <li>• Study of various insulating material.</li> </ul>	
<b>4. Power System LAB</b>	
List of major equipment (Costing more than ₹50,000)	<ul style="list-style-type: none"> <li>• 3 Phase, Phase shifting transformer</li> <li>• M-G set</li> <li>• Unsymmetrical fault analyzer kit</li> </ul>
<b>List of experimental set up</b>	
<ul style="list-style-type: none"> <li>• ABCD constants of long transmission line &amp; plotting circle diagram to estimate performance.</li> <li>• VAR Compnsation using capacitor bank</li> <li>• Determination of Steady State Power Limit</li> <li>• Measurment Of Sub-Transientit Reactances</li> <li>• Measurment of sequence Reactances</li> <li>• Fault analysis for 3-phase symmetrical fault by simulation.</li> <li>• Unsymmetrical fault analysis</li> <li>• Computer aided solution of 3 bus load flow using gauss seidal method</li> <li>• Formulation of Y bus admittance matrix using computer program.</li> </ul>	
<b>5. Control System LAB</b>	
List of major equipment (Costing more than 50,000 `)	<ul style="list-style-type: none"> <li>• Synchro Transmitter &amp; Receiver</li> <li>• Stepper motor 3kgf demo kit</li> </ul>

	<ul style="list-style-type: none"> <li>• A.C. servo motor demo kit</li> <li>• Time response of second order system.</li> </ul>
<b>List of experimental set up</b>	
<ul style="list-style-type: none"> <li>• Operation of stepper motor 3kgf in single step &amp; multistep</li> <li>• Study of potentiometer as an error detector</li> <li>• Study of synchrotransmitter &amp; receiver</li> <li>• Determination of transfer function of D.C. Servo motor</li> <li>• Study of performance characteristics Of D.C. Motor angular position control system</li> <li>• To plot torque speed characteristics Two phase A. C. Servo motor</li> <li>• Study of P, PI ,PID controller</li> </ul>	
<b>6. Network Analysis LAB</b>	
List of major equipment (Costing more than ₹50,000)	Nil
<b>List of experimental set up</b>	
<ul style="list-style-type: none"> <li>• Verification of kirchhoffs laws.</li> <li>• Study of series R-L-C circuit .</li> <li>• Study of parallel R-L-C circuit.</li> <li>• Study of fluorescent tube circuit &amp; mercury vapour lamp .</li> <li>• Measurement of z,y, abcd parameter of two port N/W.</li> <li>• To plot amplitude and phase response of anal pass filter</li> <li>• To plot pole zero diagram of given l-c network.</li> </ul>	

## 7. Industrial Drives & Control LAB

List of major equipment (Costing more than ₹50,000)

Nil

### List of experimental set up



- Half wave control rectifier
- Control of D. C. motor
- Full wave control rectifier
- Control of D. C. motor
- One quadrants chopper control of D. C. motor.
- Two quadrants chopper control of D. C. motor.
- Speed control of single phase I.M.



## 8. Switch Gear & Protection LAB

List of major equipment (Costing more than ₹ 50,000)

- Switchgear and relay testing kit.
- Microprocessor based overcurrent relay
- Simulation model for differential protection of transformer.
- Mho/impedance relay kit with short transmission line model.
- simulation model for differential /distance protection of
- Transmission line.
- Simulation model for protection of alternator.

<b>List of experimental set up</b>	
<ul style="list-style-type: none"> <li>• Study of relaying and control circuit development.</li> <li>• To plot the operating chariot inverse time overcurrent relay.</li> <li>• To study the fault stability of differential relay.</li> <li>• Study of mho distance relay to plot R-X diagram b)voltage vs admittance chara.</li> <li>• Study of combined overcurrent and earth fault protection scheme of alternator.</li> <li>• Protection of three phase transformer using differential relay.</li> <li>• To plot chara. Of rewirable fuses and mcb.</li> <li>• Study of arc extinction phenomenon.</li> <li>• Demonstration of microprocessor based protection of three phase induction motor using mm30 l &amp; t make</li> </ul>	
<b>9. Software Application LAB</b>	
List of major equipment (Costing more than ₹ 50,000)	<ul style="list-style-type: none"> <li>• Computer PC- 24.</li> <li>• Projector Epson EB-57</li> <li>• Lenovo Think center – 10</li> </ul>
<b>List of experimental set up</b>	
	
<ul style="list-style-type: none"> <li>• Write program to find voltage and power in voltage divider circuit.</li> <li>• Write a program to calculate voltage across any resistance in a circuit</li> <li>• Write a program to find transient response in RC circuit.</li> <li>• Write a program to find transient response in RL circuit</li> <li>• Write a program to plot voltage and current in resistive circuit.</li> <li>• Write a program to plot voltage and current in inductive and capacitive circuit</li> </ul>	
<b>10.High Voltage LAB</b>	

List of major equipment (Costing more than ₹50,000)

- 30KV, 250 MA, .H. V. Tester for testing
- Corona Cage
- 100 mm Sphere Gap Assembly (Manual)

**List of experimental set up**



- Measurement of insulation resistance of 11KV/110 V.P.T by Megger.
- Power frequency withstand test on 11KV, 10/5 amp CT.
- Study of corona discharge.
- Determination of insulating break-down strength of solid, liquid and gaseous dielectric media.
- Power frequency high voltage withstand test on cable.
- Study of impulse generator.
- Dry & Wet power frequency withstand test for insulator.
- Flash over test on insulator.
- Double voltage double frequency withstand test on transformer.
- Calibration of sphere gap.
- Study of 100KV high voltage testing set