FUTURE INSTITUTE OF ENGINEERING AND MANAGEMENT

Department of Electrical Engineering

Basic Electrical Laboratory

Description: Basic Electrical Laboratory is equipped with all types of AC and DC machines alongwith Transformers covering the B.Tech curriculum. The experiments are designed to expose students to the practical executions of the fundamental theories of Electrical Engineering. The students get familiar with DC machines, Transformers, Induction motors and further achieve experimental skills. The lab is also equipped with energy meters, watt meters, voltage meters, ammeters, various size and type of transformers, various types and sizes of motors.

Major Facilities	: Equipped with all different kind of machines and measuring device.
Faculty In-Charge	: Mrs. Debosmita Chakraborty, M. Tech, Assistant Professor
Technical Assistant	: Mr. Sujay Kr. Banerjee , DEE
Area	: 70.18 sq.m
No. of experiments	: 10
Courses conducted	: Basic Electrical Lab
Exclusive / Shared	: Shared

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List of Major Equipment

Sl.No.	Major Equipment	Quantity
1	220 Volt,10 Amp DC Regulated power supply	1
2	DC shunt Motor (1 Hp,220 V) - DC Shunt Generator (220 Volt,4.5Amp)set	2
3	DC Shunt motor (1 HP,220 Volt) with load	1
4	Three phase induction motor (415 Volt, 1 HP) with load set	1
5	Incantation lamp trainer equipment. Carbon 250 Volt 50cp	1
6	Single Phase Variac (Input - 220Volt,Output - 0-270 Volt,8 Amp)	5
7	Three Phase Variac (Input - 415V, Output - 0-415 Volt,8 Amp)	1
8	Single Phase Transformer (Input - 220V, Output -110V,1KVA)	1
9	Tachometer (digital contact type)(0-10,000 rpm)	1
10	Tachometer (digital non contact type)(0-10,000 rpm)	1
11	Lamp Load Box (220Volt,5Amp)	1
12	Rheostat (100 Ohm 5Amp)	5
13	Network trainer kit (0 to +/-12Volt DC)	1
14	RLC series Trainer kit (230Volt 50-60Hz)	1
15	RLC parallel Trainer kit (230Volt 50-60Hz)	1
16	Network trainer kit (0 to +/-12Volt DC)	4
17	Network trainer kit for Thevenin's theorem(0 to +/-12Volt DC)	1
18	Network trainer kit for Norton's theorem(0 to +/-12Volt DC)	1
19	Network trainer kit for Maximum power transfer theorem (0 to 12Volt DC)	1
20	Single phase Transformer (1KVA,110Volt/220Volt)	1
21	Network Trainer kit for Norton's theorem (12Volt DC)	1
22	Lux-Meter (Auto Digital)(0.1-10Lux-500Lux)	1
23	Fluorescent Lamp set. (40Watt, 230Volt, 50Hz)	1
24	Single phase Energy Meter (240Volt, 2.5Amp,5Amp, 50Hz)	2
25	Three Phase Energy Meter(5/10 Amp 440Volt)	1
26	DC Regulated power supply.(0- 30V,2A)	2
27	Audio oscillator (0-100KHz)	2

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List of Experiments as per Syllabus

Sl. No.	Name of The Experiments
1.	Introduction and uses of following instruments : (a) Voltmeter (b) Ammeter (c) Multi-meter (d) Oscilloscope Demonstration of real life Resistors, Capacitors with colour code, Inductors and Autotransformer.
2.	Demonstration of cut-out sections of machines: DC machine, Induction machine, Synchronous machine and Single phase Induction machine.
3.	Calibration of ammeter and wattmeter.
4.	Determination of steady state and transient response of R-L, R-C and R-L-C circuit to a step change in voltage.
5.	Demonstration of resonance frequency and quality factor of series and parallel R-L-C circuit.
6.	Measurement of power in three phase circuit by two wattmeter method.
7	(a) Open circuit and Short circuit test of a single- phase transformer. (b) Load test of the transformer and determination of efficiency and regulation.
8.	Demonstration of three phase transformer connection. Voltage and current relationship, phase shifts between the primary and secondary side.
9.	Demonstration of torque-speed characteristics of separately excited DC motor.
10.	Demonstration of steady state responses of R-L and R-C and R-L-C circuit and calculation of impedance and power factor.

List of Experiments beyond the Syllabus

Sl. No.	Name of The Experiments
1	V-I Characteristics of Incandescent Lamp(Carbon, Tungsten)
2	Characteristics of Fluorescent lamps