LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(An Autonomous Institution Since 2010)
Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada
Accredited by NAAC with Grade 'A' & ISO: 21001:2018, 50001:2018, 14001:2015 certified
Department of Electrical and Electronics Engineering
Accredited by NBA under Tier-I

ELECTRICAL MACHINES LAB

The Electrical Machines Laboratory is designed to support the theory study for Electromechanical Devices. The objective of this course is to supplement the theory with suitable practical experiments. This Lab Concerns with electrical machines types (DC and AC machines), power, efficiency, characteristics of electrical machines as a motor, generator, determining the parameters and performance characteristics of transformer, methods of control of the speed of motor, control of the generator voltage etc. Through hands-on experiments with real machines, students gain practical experience on transformers and various types of machine drives. This laboratory can also be used for paper publications and project work related to electrical machines and energy conversion.

Area sqm : 270
Establishment year : 1998
Total Lab cost : Rs. 44,35,729-00

List of Experiments:

DC Machines and Transformers Lab

1. Speed control of DC shunt motor by Field Current and Armature Voltage Control.
2. Brake test on DC shunt motor- Determination of performance curves.
3. Swinburne's test - Predetermination of efficiencies as DC Generator and Motor.
4. Hopkinson's test on DC shunt Machines.
5. Load test on DC compound generator-Determination of characteristics.
6. Load test on DC shunt generator-Determination of characteristics.
7. Fields test on DC series machines-Determination of efficiency.
8. Brake test on DC compound motor-Determination of performance curves.
9. OC & SC tests on single phase transformer.
10. Sumpner's test on single phase transformer.
11. Scott connection of transformers.
12. Parallel operation of Single-phase Transformers.
13. Separation of core losses of a single-phase transformer.

Induction and Synchronous Machines Lab

1. Brake test on three phase Induction Motor.
2. Circle diagram of three phase induction motor.
3. Speed control of three phase induction motor by V/f method.
4. Equivalent circuit of single-phase induction motor.
5. Power factor improvement of single-phase induction motor by using capacitors.
6. Load test on single phase induction motor.
7. Regulation of a three -phase alternator by synchronous impedance &MMF methods.
8. Regulation of three-phase alternator by Potier triangle method.
9. V and Inverted V curves of a three-phase synchronous motor.
10. Determination of Xd, Xq& Regulation of a salient pole synchronous generator.
11. Determination of efficiency of three phase alternator by loading with three phase induction motor.
12. Parallel operation of three-phase alternator under no-load and load conditions.
13. Determination of efficiency of a single-phase AC series Motor by conducting Brake test.

LIST OF EQUIPMENT IN ELECTRICAL MACHINES LABORATORY

S.No	Name of Equipment	Quantity
1	Regulated DC power supply: With DC stabilizer output rectify unit with on protections, MC meters unit is provided with heavy duty mains Transformer and Full wave rectifier, stabilizer assembly Ratings: 220v/100 Amps-DC continuous duty-Ripple less than 5%	10no
2	DSO 50MHZ (Digital oscilloscope); model-SDS1052DL	02 Nos
3	Noncontact type Digital Tachometers	02 Nos
4	Contact type Digital Tachometers	03 Nos
5	3phase dimmer stats (3ph Auto transformers) Rating:15Amps	03 Nos
6	3phase dimmer stats (3ph Auto transformers) 15A-3P.	02 Nos
7	3.5KW DC Compound motor coupled to DC Compound generator set MS base plate 3 point starter Field regulator. Make: KIRLOSKAR Make	1No. 1No. 1No. 1No.
8	3.5KW/220V/1500RPM DC Series motor coupled to 3.5KW. DC Series generator set (a)MS base plate (b)3 point starter (c)field regulator make: KIRLOSKAR	1No. 1No. 1No. 1No.
9	3.5KW/220V/1500RPM DC Shunt motor coupled to 3.5KW. DC Shunt generator set (a) MS base plate (b)3 point starter (c) field regulator make: KIRLOSKAR	2Nos. 2Nos. 2Nos. 2Nos.
10	3 phase 5KVA Alternator coupled to 5.2KW DC compound motor set (a)MS Base plate & coupling (b)3 point starter (c)field regulator. make: KIRLOSKAR Make	2Nos. 2Nos. 2Nos. 2Nos.
11	3 phase 5HP Slip ring induction motor MS Base Plate Mechanical loading arrangement with brake drum arrangement with spring balance Round dial type and type Belt Air Cooled Rotor Resistance Starter Air Cooled Auto Transformer Starter Make: Bharath Bijilee	1No. 1No. 1No. 1No. 1No.
12	DC COMPOUND MOTOR COUPLD TO ALTERNATOR (A) 7.5 HP, 220V, 1500RPM, DC Compound motor (B) 5KVA, 3Phase 400-415V, 1500RPM SYN,, Alternator (C) Static Excitation unit for Alternator (D) Base plate and coupling (E) Field Rheostat for motor (F) Three point stator for motor Make : Benn Electricals	1No 1No 1No 1No 1No 1No 1No
13	3 phase 5KVA, 1500 RPM Alternator coupled to 5.2 K.W DC compound motor set (a) MS Base plate & coupling (b) 4 point starter.	1No

14	3.5KW/220V/1500RPM DC shunt motor coupled to C shunt generator set (a) MS base plate & coupling (b) 3 point starter.	1No.
15	5HP/220V/1500RPM DC Shunt motor coupled to C series generator Make: BEPL	1Nos
16	1H.P Working Cut Machine for DC Shunt Motor. (Benn)	1Nos
17	1H.P 3Phase Synchronous M/C Working Cut Machine. (Benn)	1Nos
18	1H.P Working Cut Machine 3Phase Squirrel cage induction motor. (Benn)	1Nos
19	3.5KW/220V/1500RPM DC Shunt motor (a)Base plate (b)3 point starter (c) Mechanical loading arrangement with spring balances, Round dial type & Rope. MAKE- BENN Electricals	2No.
20	Distribution panel board for 3-phase A.C and 220-Volts D.C. Supply Consists of the following	1Nos.
21	Winding Study Motor-1H.P/415V/3ph. SQIM with 72 Terminals with Patch cords and BDA (make: Benn Electricals)	1Nos
22	Rotary machine test bench for investigating operation Principles & performances characteristics of AC and DC rotary machines (Make: Emsys Tech.)	1Nos
	Universal Electrical work station (Meters and maintenance for universal electrical work station as recurring items)	1Nos
23	3 Point starters	4Nos
24	7.5 hp 3 Point starters	4Nos
25	Loading Inductance 15A, 1-Phase	2No
26	Continuously Variable 3-Phase,415V,50Hz Loading Inductor Rating : 4 KW, 10A	1No

Faculty Incharge : K.Nagalinga Chary

Technician : M. Madhusudhana Reddy