JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF MECHANICAL ENGINEERING

I Year - II Semester		L	T	P	C
		0	0	3	1.5
	BASIC ELECTRICAL & ELECTRONICS ENGINEERING LAB				

Learning Objectives:

☐ To predetermine the efficiency of dc shunt machine using Swinburne's
☐ test.To predetermine the efficiency and regulation of 1-phase transformer with
   O.C and S.C tests.
☐ To obtain performance characteristics of DC shunt motor &3-phase induction motor.
☐ To find out regulation of an alternator with synchronous impedance method.
☐ To control speed of dc shunt motor using Armature voltage and Field flux control methods.
☐ To find out the characteristics of PN junction diode & transistor
☐ To determine the ripple factor of half wave & full wave rectifiers.

Section A: Electrical Engineering:
The following experiments are required to be conducted as compulsory experiments:

1. Swinburne's test on D.C. Shunt machine (predetermination of efficiency of a given D.C. shuntmachine working as motor and generator).
2. OC and SC tests on single phase transformer (predetermination of efficiency andregulation at given power factors).
3. Brake test on 3-phase Induction motor (determination of performance characteristics)
4. Regulation of alternator by Synchronous impedance method.
5. Speed control of D.C. Shunt motor by
 a) Armature Voltage control b) Field flux control method
6. Brake test on D.C. Shunt Motor.

Section B: Electronics Engineering:

The following experiments are required to be conducted as compulsory experiments:

1. PN junction diode characteristics a) Forward bias b) Reverse bias (Cut in voltage andresistance calculations)
2. Transistor CE characteristics (input and output)
3. Half wave rectifier with and without filters.
4. Full wave rectifier with and without filters.
5. CE amplifiers.
6. OP- amp applications (inverting, non inverting, integrator and differentiator)

Learning Outcomes:

The student should be able to:
☐ Compute the efficiency of DC shunt machine without actual loading of the machine.
☐ Estimate the efficiency and regulation at different load conditions and power factors forsinglephase transformer with OC and SC tests.
☐ Analyse the performance characteristics and to determine efficiency of DC shunt motor

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&3-Phaseinduction motor..

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☐ Pre-determine the regulation of an alternator by synchronous impedance method.
☐ Control the speed of dc shunt motor using Armature voltage and Field flux control
☐ methods.Draw the characteristics of PN junction diode & transistor
☐ Determine the ripple factor of half wave & full wave rectifiers.