

# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA KAKINADA – 533 003, Andhra Pradesh, India DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

II Year I Semester		L	T	P	C
		0	0	3	1.5
DC MACHINES AND TRANSFORMERS LAB					

#### **Preamble:**

The aim of the lab is to demonstrate the operation of various types of DC machines and transformers under no load and loaded conditions by conducting various tests and performance will be analyzed.

## **Course Objectives:**

- To plot the magnetizing characteristics of DC shunt generator and understand the mechanism of self-excitation.
- To control the speed of DC motors.
- To determine and predetermine the performance of DC machines.
- To predetermine the efficiency and regulation of transformers and assess their performance.

### (Any 10 of the following experiments are to be conducted)

- 1. Determination of critical field resistance and critical speed of DC shunt generator by using Magnetization characteristics
- 2. Predetermination of efficiency of DC Machine by conducting Swinburne's test
- 3. Performance characteristics of a DC shunt motor by conducting Brake test.
- 4. Predetermination of efficiency of two DC shunt machines by conducting Hopkinson's test
- 5. Speed control of DC shunt motor by Field and armature Control methods
- 6. Determination of constant losses of DC shunt motor by conducting Retardation test
- 7. Separation of losses (Eddy current and Hysteresis) in a DC shunt motor.
- 8. Predetermination of efficiency, regulation and to obtain the parameters of the equivalent circuit of a single phase transformer by conducting OC & SC tests.
- 9. Predetermination of efficiency, regulation and to obtain the parameters of the equivalent circuit of a single phase transformer by conducting test.
- 10. Conversion of three phase to two phase supply by using Scott connection of transformers
- 11. Parallel operation of two Single phase Transformers under no-load and load conditions
- 12. Separation of core losses of a single phase transformer
- 13. Heat run test on a bank of three single phase Delta connected transformers

#### **Course Outcomes:**

At the end of the course, student will be able to

- Determine and predetermine the performance of DC machines and Transformers.
- Control the speed of DC motor.
- Obtain three phase to two phase transformation.