III Year I Semester	L	T	P	C
17EE513	0	0	3	2

POWER ELECTRONICS LABORATORY

Course Educational Objectives:

- To study the characteristics of various power electronic devices and analyze firing circuits and commutation of SCR.
- To analyze the performance of single –phase and three – phase full –wave bridge converters with both resistive and inductive loads.
- To understand the operation of AC voltage regulator with resistive and inductive loads.
- To understand the working of Buck converters, Boost converter and inverters.

Note: Any 8 of the following experiments are to be conducted

1. Study of characteristics of Thyristor, MOSFET & IGBT.
2. Design and development of firing circuits for Thyristor.
3. Single-phase Half controlled converters with R and RL load.
4. Single-phase fully controlled bridge converter with R and RL loads.
5. Analysis of single-phase IGBT based PWM Inverter connected to R and RL Load.
6. Analysis of three-phase IGBT based PWM Inverter connected to R and RL Load.
7. Analysis of three -phase AC Voltage controller fed to R and RL load.
8. Analysis and speed control of DC motor drive using three -phase full converter.
9. Analysis of a four quadrant chopper feeding DC motor.
10. Analysis and speed control of 3-phase slip ring Induction motor by Static Rotor Resistance controller.
11. Analysis of three-phase SVPWM pulse generation using PIC micro controller/DSP processor.
12. Analysis of DSP based V/F control of 3-phase Induction motor.
13. Analysis of vector control based speed control of three-phase Induction Motor drive.

Note: Any 2 of the following simulation experiments are to be conducted

1. Analysis of single-phase AC Voltage controller with RLE load.
2. Simulation of single-phase PWM inverter using SPWM.
3. Design and verify DC-DC Buck converter using simulation.
4. Design and verify Simulation of DC-DC Boost converter.
5. Simulation of three phase PWM inverter using SPWM.