POWER ELECTRONICS AND DRIVES LABORATORY-II

Course Code:13EE2218

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Pre requisites: Power Electronics, Power Electronics & Drives

Course Educational Objectives:

The lab is intended for the students to get hands on experience in understanding power semiconductor devices, converter circuits and drives using MATLAB/SIMULINK software.

Course Outcomes:

At the end of the course, the students will be able to design, model and simulate various power electronic converter circuits and drives for various industrial applications by using MATLAB/SIMULINK software.

LIST OF EXPERIMENTS (ANY TEN EXPERIMENTS TO BE PERFORMED)

1. Simulation of Chopper fed DC motor using MATLAB/ SIMULINK
2. Development and Simulation of 3-phase PWM Inverter with sinusoidal pulse-width modulation using MATLAB/ SIMULINK
3. Characteristics of induction machines under balanced and symmetrical conditions for the following using MATLAB/ SIMULINK
    a. dq model in synchronous reference frame
    b. dq model in stator reference frame
    c. dq model in rotor reference frame

4. Simulation of v/f control of an induction motor drive using MATLAB/SIMULINK
5. Simulation of Open-loop v/f control of a synchronous motor drive using MATLAB/SIMULINK.

6. Simulation of a GTO based chopper circuit using MATLAB/ SIMULINK
7. Operation of a single phase PWM rectifier with R load.
8. Performance & speed control of 3 phase slip ring Induction motor by Static Rotor Resistance controller.
9. Three phase PWM Pulse generation using Micro controller
10. Microprocessor based speed control of three phase Induction Motor
11. Braking Test of three phase induction motor
12. Speed control of single phase induction motor.
13. Microcontroller based slip ring Induction motor speed Control using static KRAMMER drive.
14. Speed Control of DC Shunt Motor using SCR Dual converter.
15. Closed loop speed Control of PMDC motor using SCR Converter.

Textbooks:

1. Ned Mohan, Tore M. Undelan and William P. Robbins, "*Power Electronics*", John Wiley & Sons, 2007.

2. Md. H. Rashid, "*Power Electronics*", Pearson Education, 3rd Edition, 2008.

3. Bimal K. Bose, "*Modern Power Electronics and AC Drives*", Prentice-hall Of India Pvt. Ltd, 2008.

4. Rashid, M., "*Simulation of Power Electronic Circuits using PSPICE*", PHI, 2006.