



Techno India NJR Institute of Technology

Academic Administration of Techno NJR Institute

Lab Deployment

Name of Faculty: Mr. Rajkumar Soni

Subject Code: 6EC4-24

Subject Name: Power Electronics Lab

SEM: VI

Department: Department of Electronics & Communication Engineering

Total No. of Lab: 12

COURSE OUTCOMES

At the end of this course students will be able to:

CO1: Acquire knowledge of V-I characteristics of various Power Semiconductor devices and able to design and simulate their base/gate drive circuits

CO2: Understand the design of cosine controlled triggering circuit of SCR

CO3: Validate the output performances of different controlled rectifier circuits with various loading conditions.

CO4: Understand the design of different DC-DC converter circuits (isolated and non-isolated type) and verifying through experimentation.

CO5: Understand the design and operation of single phase Voltage Source Inverter circuit topology with SinPWM control and simulation of the same circuit in MATLAB-SIMULINK platform.

Lab No.	Topic
1	Study the characteristics of SCR and observe the terminal configuration, Measure the breakdown voltage, latching and holding current. Plot V-I characteristics..
2	Perform experiment on triggering circuits for SCR. i.e. R triggering, R-C triggering and UJT triggering circuit.
3	Study and test AC voltage regulators using triac, antiparallel thyristors and triac&diac.

Techno India NJR Institute of Technology
For more information visit: www.technoindia.com
Dr. Pankaj Kumar Perwa
(Principal)

4	Study and obtain the waveforms for single-phase bridge converter.
5	Perform experiment on single phase PWM inverter.
6	Perform experiment on buck, boost and buck-boost regulators.
7	Control speed of a dc motor using a chopper and plot armature voltage versus speed characteristic.
8	Control speed of a single-phase induction motor using single phase AC voltage regulator.
9	I. Study single-phase dual converter. II. Study speed control of dc motor using single-phase dual converter.
10	Study single-phase cyclo converter.
11	Perform experiment on Motor control – open loop & closed loop
12	Design, observe and perform experiment on various type of pulse generation from DSP/ FPGA Platform. Perform experiment for PWM inverters and choppers.

TEXT/REFERENCE BOOKS

1. M. H. Rashid,” Power electronics: circuits, devices, and applications”, Pearson Education India, 2009.
2. N. Mohan and T. M. Undeland,” Power Electronics: Converters, Applications and Design”, John Wiley & Sons, 2007.
3. R. W. Erickson and D. Maksimovic,” Fundamentals of Power Electronics”, Springer Science & Business Media, 2007.
4. L. Umanand,” Power Electronics: Essentials and Applications”, Wiley India, 2009

For Techno India NJR Institute of Technology
 पंकज पौरवाल
 Dr. Pankaj Kumar Perwal
 (Principal)