

# GUJARAT TECHNOLOGICAL UNIVERSITY

## DIPLOMA IN POWER ELECTRONICS

### SEMESTER: V

Subject Name: **Power Electronics Practice**

Only Laboratory oriented subject. This should cover experiments for performance and tutorials based on the on the theory of the subjects “**Power Electronics Circuits**” and “**Applied Power Electronics**”. Teacher should help students to perform experiments/simulations using available softwares. The software used for this purpose should have capability to assess the performance of different numbers of various semiconductor devices.

#### List of Experiments:

Sr. No.	Experiment Title
1.	To study and test different triggering circuits for Thyristors (minimum 2 exp. Should be performed) <ul style="list-style-type: none"><li>• Using R Triggering circuit</li><li>• R-C triggering circuit</li><li>• Diac trigger circuit and UJT triggering circuit</li><li>• Firing circuit using ramp comparator scheme</li><li>• Cosine wave scheme</li><li>• OpAmps and gates scheme and digital firing circuits.</li></ul>
2.	To study and test single phase half controlled bridge converter.
3.	To study the operation of single phase fully controlled bridge converter.
4.	To study and test different types of single phase ac regulators (minimum 2 exp. Should be performed) <ul style="list-style-type: none"><li>• AC regulator using TRIAC</li><li>• AC regulator using antiparallel Thyristors</li><li>• AC regulator using a TRIAC and a DIAC with R-C triggering circuit</li><li>• AC regulator using photo devices to use in a application like control of road lights.</li></ul>
5.	To study and test step down choppers ( Minimum 1 exp. Should be performed) <ul style="list-style-type: none"><li>• Current commutated and voltage commutated choppers using Thyristors</li><li>• Transistorised DC chopper</li><li>• DC step down MOSFET chopper</li><li>• GTO chopper.</li></ul>
6.	To study and test step up transistorised chopper
7.	To study single phase modified series inverter

8.	To study single phase transistorised inverter <ul style="list-style-type: none"> <li>• Bridge inverter</li> <li>• Single phase inverter using a centre tapped transformer</li> </ul>
9.	To study a transistorised single phase PWM converter
10.	To study and test a three phase half controlled Thyristorised bridge converter with its triggering circuit
11.	To study and test a three phase fully controlled Thyristorised bridge converter with its triggering circuit
12.	To study and test a three phase Thyristorised AC regulator
13.	To study series resonant inverters
14.	To study parallel resonant inverters