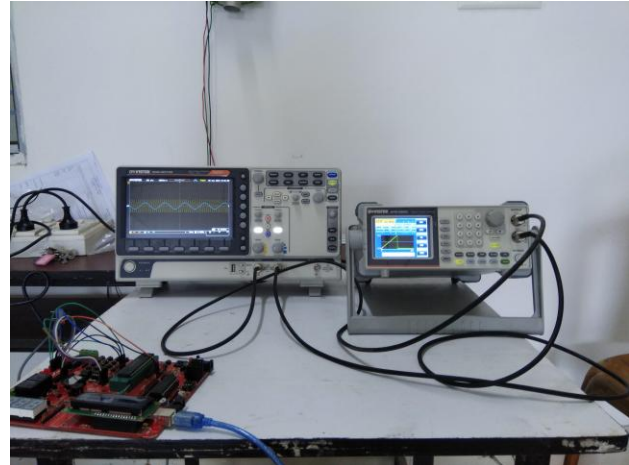


Aliah University

Department of Electrical Engineering

Power Electronics Laboratory

Power Electronics Lab is one of the few labs which are critical for both 'Electrical Engineering' & 'Electronics & Communication Engineering' under graduate students. In this lab both hardware and simulation based experiments are conducted. Students can analyze the waveform of various converters in simulation and compare them with the practical hardware results seen in latest digital oscilloscopes. Apart from converters' analysis, power electronics lab also deals with the study of characteristics of different power semiconductor devices like SCR, IGBT, MOSFET, DIAC & TRIAC.



List of experiments:

Part A: Simulation

1. Rectifier
 - i. Uncontrolled diode rectifier
 - ii. Controlled rectifier with R & R-L load and effect of freewheeling diode
2. DC – DC converter (Chopper)
 - i. Step down (Buck)
 - ii. Step up (Boost)
 - iii. Step up/down (Buck – Boost)
3. Single phase inverter
 - i. Half bridge square-wave inverter
 - ii. Full bridge square-wave inverter
4. AC – AC converter (Regulator)
 - i. Single phase regulator with R load
 - ii. Single phase regulator with R-L load

Additional Experiments

- A. Cycloconverter (with frequency as well as RMS control)
- B. Three phase inverter
- C. PWM inverter

Part B: Hardware

1. V-I characteristics of SCR
2. V-I characteristics of IGBT
3. V-I characteristics of MOSFET
4. V-I characteristics of DIAC
5. Full wave fully controlled SCR converter
6. Full wave fully controlled SCR converter with R-L load and effect of freewheeling diode
7. Full wave fully controlled AC voltage regulator
8. Mid-point cycloconverter
9. Study of Uninterruptible Power Supply (UPS)