

REE661	POWER ELECTRONICS LABORATORY	L T P: 0 0 2	1 Credit
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Note: The minimum of 10 experiments is to be performed out of which at least three should be software based.

1. To study triggering of (i) IGBT (ii) MOSFET (iii) power transistor
2. To study V-I characteristics of SCR and measure latching and holding currents.
3. To compare the R, RC & UJT trigger circuit for SCR.
4. To study the commutation circuit for SCR.
5. To study single phase fully controlled bridge rectifiers with resistive and inductive loads.
6. To study single phase fully controlled bridge rectifiers with DC motor load.
7. To study three-phase fully controlled bridge rectifier with resistive and inductive loads.
8. To study single-phase ac voltage regulator with resistive and inductive loads.
9. To study single phase cyclo-converter
10. To study the four quadrant operation of chopper circuit
11. To study MOSFET/IGBT based single-phase bridge inverter.

Software based experiments (PSpice/MATLAB or equivalent open source freeware software like Scilab using Spoken Tutorial MOOCs)

12. To obtain the simulation of single phase half wave controlled rectifier with R and RL load and plot load voltage and load current waveforms.
13. To obtain simulation of single phase fully controlled bridge rectifier and plot load voltage and load current waveform for inductive load.
14. To obtain simulation of single phase full wave ac voltage controller and draw load voltage and load current waveforms for inductive load.
15. To obtain simulation of step down dc chopper with L-C output filter for inductive load and determine steady-state values of output voltage ripples in output voltage and load current.

Spoken Tutorial (MOOCs):
Spoken Tutorial MOOCs, 'Course on Scilab', IIT Bombay (<http://spoken-tutorial.org/>)
Text/Reference Books:

1. M.H. Rashid, "Power Electronics: Circuits, Devices and Applications", 3rd Edition, Prentice Hall of India.
2. D.W. Hart, "Introduction to power Electronics", Prentice Hall of India.





