SUBJECT NO-EE31011, SUBJECT NAME- POWER ELECTRONICS

LTP- 3-1-0,CRD- 4

SYLLABUS :-

pre requisite: EE10001 and EC21001 Introduction: need for power conversion with efficient, high frequency,lightweight converters;Power electronic converters classifications and scope;Power semiconductor switches: power/fast diodes, SCR, and transistors(BJT, MOSFET and IGBT) Ratings, static and dynamic characteristics, drive and switching aid circuits and cooling; isolation; protection;DC to DC conversion: Choppers: non-isolated: Buck, Boost and Buck-Boostconverters; circuit configuration and analysis with; continuous anddiscontinuous loads; H-bridge converter multi-quadrant operation;isolated: forward, fly-back converters; example of a typical drivecircuit;AC to DC conversion: Rectifiers: controlled/half-controlled/uncontrolled:single phase and three phase operation, Operation with R, R-L, back emfload; power factor, harmonics and effect of source inductance; Cascadeoperation; dual converters; a typical trigger / drive circuit;DC to AC conversion: Inverters: current source and voltage sourceinverters, active and reactive power handling; single phase and threephase voltage source and PWM inverters; PWM techniques; active front-end rectifier; a typical trigger / drive circuit;AC to AC conversion: Single phase AC static switches; transient-free switching of inductive loads; voltage regulators; cycloconverter;