

## Power electronics notes

The primary function of power electronic circuits is the processing and control of electrical energy. This class discusses the history, evolution, needs, and goals of power electronics.

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**UNIT I POWER SEMICONDUCTOR DEVICES:** Construction, Principle of operation Power diodes, power transistors SCR, TRIAC, GTO, MOSFET, IGBT - driver circuit, turn - on method - commutation series and parallel connections

**UNIT II PHASE CONTROLLED CONVERTERS:** Converter inverters operation - Single phase and three phase-controlled rectifiers(half and full converters) with R,RL and RLE load effect of source inductance and firing circuits - Dual converters - single phase & three phase dual converters

**UNIT III DC TO DC CHOPPER:** Voltage, current load commutated chopper - step-up chopper and firing circuits - one, two and four quadrant chopper application to DC driving control

**UNIT IV INVERTERS:** Series inverter - parallel inverter - current source inverter - voltage source inverter - Modified McMurray, auto sequential inverter- PWM inverter - UPS.

**UNIT V AC CHOPPER, CYCLOCONVERTER & VOLTAGE CONTROLLER:** Single phase AC chopper, multistage sequence control - step up and step down cyclo-converter - three-phase to single-phase and single phase to three-phase cycloconverter - triggering circuit based on microcontroller - single-phase AC voltage controller with R, RL, RLE.

Power electronics is the application of solid-state electronics to the control and conversion of electric power. The first high power electronic devices were mercury-arc valves. In modern systems, the conversion is performed with semiconductor switching devices such as diodes, thyristors, and power transistors such as the power MOSFET and IGBT.

It will help you to understand question paper pattern and type of power electronics question and answer asked in B Tech ECE, EEE power electronics exam. You can download the syllabus in power electronics pdf form.

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Web: <https://sumthingtasty.co.za/contact-us/>

Email: [energystorage2000@gmail.com](mailto:energystorage2000@gmail.com)

WhatsApp: 8613816583346

