

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Instrumentation)
Semester: II
Syllabus with Effect from: June - 2010

Paper Code: PS02EINS01	Total Credit: 4
Title Of Paper: Power Electronics	

Unit	Description in detail	Weightage (%)
I	Thyristors: Turn-On Methods, Series & Parallel Operations, Introduction to Thyristor Family: PUT, SUS, SCS, SITH, ASCR , RCT, LASCR, GATT, Diac & Triac, Power Transistors: BJT, MOSFET, IGBT & SIT, Gate Turn Off Thyristor, Field–Controlled Thyristor, MOS-Controlled Thyristor, Power Integrated Circuit.	25%
II	Commutation Techniques, Phase Controlled Rectifiers, Three Phase Thyristor Converter, Effect of Source Impedance on the Performance of Converters, Inverters: Voltage Control in Single-phase, Series & Parallel.	25%
III	Choppers: Principle of Operation, Control Strategies, Step-up, Types & Thyristor Chopper Circuits, Cycloconverters: Principle of Operation, Step-up, Step-down, Three-phase to Single –phase, Three-phase to Three –phase, SMPS, UPS.	25%
IV	DC Drives: Basic Machine Equations, Braking Modes, Schemes for DC Motor Speed Control, Power Factor Improvement, AC Drives: Principle of Operation, Induction Motor Equations, Squirrel Cage Rotor Design, Stator Voltage Control, Variable Frequency Control, Rotor Resistance Control & Synchronous Motor Drives.	25%

Basic Text & Reference Books:-

- Power Electronics, P. S. Bhimbhra, Khanna Publishers.
- Power Electronics, M. D. Singh & K. B. Khnchandani, Tata McGraw-Hill Publishing Company Limited.
- Power Electronics-Circuits, Devices and Applications, Muhammad H. Rashid, Prentice Hall of India Private Limited.
- Power Electronics-Devices and Circuits, C. M. Pauddar, Jain Brothers.

