PE10A102 ANALYSIS OF POWER CONVERTERS **L T P C 3 0 0 3**

UNIT I SINGLE PHASE AC-DC CONVERTER **12**

Static Characteristics of power diode, SCR and GTO, half controlled and fully controlled converters with R-L, R-L-E loads and free wheeling diodes – continuous and discontinuous modes of operation - inverter operation – Dual converter – Sequence control of converters – performance parameters: harmonics, ripple, distortion, power factor – effect of source impedance and overlap-reactive power and power balance in converter circuits.

UNIT II THREE PHASE AC-DC CONVERTER **9**

Semi and fully controlled converter with R, R-L, R-L-E - loads and free wheeling diodes –inverter operation and its limit – dual converter– performance parameters – effect of source impedance and over lap – 12 pulse converter.

UNIT III DC-DC CONVERTERS **9**

Principles of step-down and step-up converters – Analysis of buck, boost, buck-boost and Cuk converters – time ratio and current limit control – Full bridge converter – Resonant and quasi – resonant converters.

UNIT IV AC VOLTAGE CONTROLLERS **9**

Static Characteristics of TRIAC- Principle of phase control: single phase and three phase controllers – various configurations – analysis with R and R-L loads.

UNIT V CYCLOCONVERTERS **6**

Principle of operation – Single phase and three phase cycloconverters – power factor Control- Forced commutated cycloconverters.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Ned Mohan, Undeland and Robbin, “Power Electronics: converters, Application and design” John Wiley and sons.Inc, Newyork, 1995.

2. Rashid M.H., “Power Electronics Circuits, Devices and Applications ", Prentice Hall India, New Delhi, 1995.

3. Cyril W.Lander, “power electronics”, Third Edition McGraw hill-1993

REFERENCES:

1. P.C Sen.," Modern Power Electronics ", Wheeler publishing Co, First Edition, New Delhi-1998.

2. P.S.Bimbra, “Power Electronics”, Khanna Publishers, Eleventh Edition, 2003.

3. Vedam Subramanyam, “Power Electronics”, New age International Ltd, 2001.