

EC 257:Power Electronics

CREDITS =6 (L=4,T=0,P=2)

- 1 **Thyristors:** Introduction,Thyristor family, Characteristics and specifications, two transistor analogy, turn ON and turn OFF methods. Switching characteristics. 8
2. **Gate Characteristics, series and parallel connection:** Firing of thyristors, pulse transformer, opto isolators, Gate triggering devices and circuits. Series and parallel operation of thyristors. String efficiency and derating. 6
- 3 **Phase Controlled Rectifiers:** Phase angle control, Single phase half wave controlled, Single phase full wave controlled rectifiers, Fully controlled rectifiers, free wheeling diodes. Various configurations and comparison, Applications. Resonant Converters. 6
- 4 **Choppers:** Principle of operation, control schemes, step up choppers, step down choppers, PWM scheme and applications to motor control and SMPS. 6
- 5 **Inverters:** Classification, series inverters, parallel inverters, single phase inverters, Applications 6
- 6 **Modern Power Devices:** Power MOSFETS, Phase Control Thyristor, IGBT, GTO,RCT operation, characteristics and applications. 8

REFERENCE BOOKS

Title: Power Electronics

Author: M.D. Singh and K.B. Khanchandani

Publisher: Tata Mcgraw Hill Publishing Company, New Delhi

Title: Power Electronics :Circuit, Devices and Applications

Author: Mohammed Rashid

Publisher: Pearson Education Asia

Title: Power Electronics:Converter, Application and Design

Author: Ned Mohan, Tore M. Undeland and William P. Robbins

Publisher: John Wiley and Sons