



- (a) Draw the basic structure of power diode and explain its operation with the help of its V-I characteristics. 07
- (b) Explain the two transistor analogy of SCR. 07
- Q-3 Attempt all questions (14)**
- (a) Draw the structure of TRIAC and explain its operation in any two modes. 07
- (b) Explain how snubber circuit is useful in over voltage protection for thyristor. 07
- Q-4 Attempt all questions. (14)**
- (a) Draw the circuit diagram and waveforms of single phase half wave controlled rectifier with resistive load and explain its operation. 07
- (b) Draw the circuit diagram and waveforms of single phase full wave bridge controlled rectifier with  $R-L$  load and explain its operation. 07
- Q-5 Attempt all questions (14)**
- (a) Draw the circuit diagram and waveforms of single phase half bridge inverter with resistive load and explain its operation. 07
- (b) Draw the block diagram of online UPS and explain its operation. 07
- Q-6 Attempt all questions (14)**
- (a) Draw the circuit diagram of class A chopper and explain its operation. 07
- (b) A 230 V (rms), 50 Hz single phase half wave controlled rectifier is feeding a resistive load of 100  $\Omega$ . If the firing angle of SCR is  $\alpha = 45^\circ$ , Determine  
i) Average load voltage ii) RMS load voltage iii) PIV across SCR. 07
- Q-7 Attempt all questions. (14)**
- (a) Draw the circuit diagram and waveforms of three phase to single phase cyclo-converter for resistive load and explain its operation. 07
- (b) Draw the circuit diagram and waveforms of single phase to single phase cyclo-converter for resistive load and explain its operation. 07
- Q-8 Attempt all questions (14)**
- (a) Draw the circuit diagram and waveforms of Jones chopper and explain its operation. 07
- (b) Explain temperature controller using power electronics. 07

