

Power Electronics [EE601]

Assignment

1. Explain with suitable diagrams the switching characteristics (turn on and turn off) of an SCR.
2. Describe the protection schemes needed during the series operation of SCRs.
3. Explain the operation of RC triggering circuit of SCR.
4. Explain with necessary diagrams and waveforms the operation of a single phase full converter (B-2) in rectifier mode for RLE load. Thereby find out the average output voltage.
5. Describe with a suitable diagram the class C commutation of an SCR.
6. A dc battery is charged through a resistor R as shown in Fig. Derive an expression for the average value of charging current in terms of E_m , E_b and R on the assumption that SCR is fired continuously.
 - i) For an ac source voltage of 230 V, 50 Hz, find the value of average charging current for $R=5\Omega$, $E_b=150$ V.
 - ii) Find the power supplied to battery and that dissipated in the resistor.
 - iii) Calculate the supply power factor.
7. Explain with a suitable diagram the operation of a 3 phase full converter for firing angle= 30° and draw relevant waveforms.
8. Explain with suitable diagrams the effect of source inductance in 1-pulse converter.