

Duration: 3hrs

[Max Marks:80]

- N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR (4*5=20) [20]
- a Draw SCR characteristics and Define Holding and Latching current.
 - b What is a cycloconverter? Give some of its industrial applications.
 - c IGBT is superior to BJT and power MOSFET: Justify.
 - d Draw and explain a basic gate drive circuit for TRIAC.
 - e What is pulse width modulation? List the various PWM techniques in inverter.
- 2 a Explain the effect of source inductance on the performance of a single phase fully controlled bridge converter. Derive expression of output voltage and current. [10]
- b Explain the need of commutation in SCR. What are different methods of commutation of SCR. Explain any one force commutation method in detail. [10]
- 3 a Describe the basic structure of IGBT and Explain the V-I characteristics. [10]
- b What is the need of triggering circuits? Draw synchronized UJT triggering circuit for SCR. Describe it briefly with relevant voltage and current waveforms. [10]
- 4 a Write short note on protection of SCR against di/dt, dv/dt overcurrent and overvoltage. [10]
- b Explain continuous mode fly-back converter. Derive the relation for load voltage. [10]
- 5 a List the advantages and disadvantages of the Buck and Boost converter. [10]
- b Explain the working of single phase to single phase cycloconverter with circuit diagram and waveforms. [10]
- 6 a Explain the principle of operation of on-off controlled AC voltage controller [10]
- b Explain the operation of single phase bridge inverter with the help of voltage and current waveform for resistive load. [10]
