

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 [20]**
- a** Draw the characteristics of TRIAC and what are the applications of TRIAC? [5]
 - b** Compare Forced commutation and Natural commutation of SCR. [5]
 - c** Explain the significance of freewheeling diode in controlled rectifiers. [5]
 - d** What are the different triggering methods? Describe any one method. [5]
 - e** Explain the block diagram of SMPS. [5]
- 2 a** Explain latch-up phenomenon in IGBT. How it can be overcome? [10]
- b** Explain synchronized UJT relaxation oscillator circuit to trigger SCR. [10]
- 3 a** Explain Half Wave Controlled Rectifier for inductive load [10]
- b** Draw VI characteristics of SCR and explain in brief all conducting states. [10]
- 4 a** List the advantages and disadvantages of the Buck and Boost converter. [10]
- b** Explain in detail the multiple pulse waves modulating (PWM) technique for single-phase inverters. [10]
- 5 a** Explain continuous mode fly-back converter with appropriate waveform. [10]
- b** Draw and explain boost converter feeding an inductive load (R-L) with neat diagram and waveforms. Derive the expression for output voltage. [10]
- 6 a** Explain the working of single phase cycloconverter with circuit diagram and waveforms. [10]
- b** Discuss the significance of, various performance parameters for DC-AC converters. Derive the formula for Harmonic Factor, THD and Displacement Factor. [10]
