

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.

QP-10065294

- 1 Attempt any FOUR [20]
- a IGBT is superior to BJT and power MOSFET: Justify. [5]
- b Explain UJT as a relaxation oscillator. [5]
- c Summarize the advantages of PWM technique used in inverter. [5]
- d Why freewheeling diode is necessary in controlled rectifier? Explain with suitable example [5]
- e Draw and explain complete protection circuit for SCR. [5]
- 2 a What are the different types of commutation circuits used for SCR? Explain the working of Class-C commutation circuit in detail. [10]
- b Show and discuss the waveforms for TRIAC gate triggering circuit with DIAC. [10]
- 3 a Draw the waveforms only of source voltage, source current and output voltage for 1- ϕ full wave full bridge-controlled rectifier with effect of source inductance. Assume firing angle 45° [10]
- b 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]
- 4 a Describe Buck DC-DC converter with appropriate waveforms. [10]
- b Discuss the significance of various performance parameters for AC-AC converters [10]
- 5 a Describe the full bridge inverter for inductive load and draw suitable waveforms. [10]
- b List the advantages and disadvantages of the Buck and Boost converter. [10]
- 6 a Discuss the significance of, various performance parameters for DC-AC converters. Derive the formula for Harmonic Factor, THD and Displacement Factor. [10]
- b Explain the working of single phase to single phase cycloconverter with circuit diagram and waveforms [10]
