

314363

25226

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following :

10

- (a) Draw labelled symbol of SBS & PVT.
- (b) Define holding current and latching current.
- (c) List different turn on methods of SCR.
- (d) State the use of freewheeling diode in controlled Rectifier.
- (e) Draw circuit diagram of single phase centre tapped full wave controlled Rectifier with R-load.
- (f) Define the term inverter. Give any two applications of inverter.
- (g) Draw the basic block diagram of UPS.

2. Attempt any THREE of the following :

12

- (a) Describe with neat sketch the VI characteristics of Triac.
- (b) Explain class B commutation with neat diagram.
- (c) Suggest a suitable type of inverter to produce square wave output and write its operation with neat diagram.
- (d) Draw the block diagram of SMPS and state the function of each block.



- 3. Attempt any THREE of the following : 12**
- (a) Explain with circuit diagram the operation of class C commutation.
 - (b) With the help of circuit diagram & waveform, explain the operation of semi-converters with RL load.
 - (c) Draw the circuit diagram of step up chopper with input and output waveforms. And state its output voltage expression.
 - (d) Explain with circuit diagram the operation of emergency lighting system.
- 4. Attempt any THREE of the following : 12**
- (a) Describe with neat sketch VI characteristics of SCR.
 - (b) Compare between RC triggering and R triggering (any four point).
 - (c) Explain with circuit and waveform the operation of single phase half wave controlled rectifier with RL load.
 - (d) Explain operation of series inverters with neat circuit diagram and waveform.
 - (e) With circuit diagram, explain the operation of battery charger using SCR.
- 5. Attempt any TWO of the following : 12**
- (a) Explain with sketch the operation of power MOSFET.
 - (b) State the need of protection circuit of SCR. Describe the working of snubber circuit with diagram.
 - (c) Explain the operation of three phase half wave controlled rectifier with circuit diagram and also sketch its input and output waveforms.
- 6. Attempt any TWO of the following : 12**
- (a) Draw labelled constructional diagram for GTO and describe its working principle with V-I characteristics.
 - (b) Draw full wave controlled Rectifier with R-L load with freewheeling diode. Explain the effect of freewheeling diode on the circuit with waveforms.
 - (c) Describe the working principle of stepdown chopper using IGBT with R load.
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