

22427

24225

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) Define holding and latching current.
- (b) Draw the symbols of DIAC & TRIAC.
- (c) Define term 2's complement.
- (d) Define firing angle and conduction angle related to phase controlled rectifier.
- (e) Define converters and state its types.
- (f) Define Chopper. State its types.
- (g) Draw the basic block diagram of UPS.

2. Attempt any THREE of the following :

12

- (a) Draw V-I characteristics of SCR and explain it.
- (b) Describe the working of battery charger using SCR with circuit diagram.
- (c) Explain operations of step-up chopper with a neat diagram.
- (d) Draw half-wave controlled rectifier with 'R' load. Explain the working with waveform.



- 3. Attempt any THREE of the following : 12**
- (a) Explain class – ‘B’ commutation with neat circuit diagram.
 - (b) Describe the effect of freewheeling diode with respect to single phase halfwave controlled rectifier with ‘RL’ load.
 - (c) Explain operation of series inverter with neat circuit diagram and waveform.
 - (d) Draw block diagram of SMPS and state function of each block.
- 4. Attempt any THREE of the following : 12**
- (a) Describe class-‘C’ commutation method of SCR with diagram and waveforms.
 - (b) Describe the effect of freewheeling diode with respect to 1 ϕ center tap fully controlled rectifier with RL load.
 - (c) Describe the working of step-down chopper with circuit diagram and I/P and O/P waveform.
 - (d) Explain with circuit diagram the operation of emergency lighting system.
 - (e) State the types of turn on methods of SCR and explain any one.
- 5. Attempt any TWO of the following : 12**
- (a) Describe working of TRIAC with its construction and V-I characteristics.
 - (b) State the need of protection circuit of SCR. Describe the working of snubber circuit with neat diagram.
 - (c) Compare DIAC and TRIAC (6 points).
- 6. Attempt any TWO of the following : 12**
- (a) Explain operation of series inverter circuit with neat diagram.
 - (b) Draw symbol of SCR and state its operating principle with two transistor analogy ckt.
 - (c) (i) Draw symbol of LASCR, SCS.
(ii) Describe working of power MOSFET with diagram.
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