

22427

11920

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following. **10****
- a) Draw labeled symbol of SBS and PUT.
 - b) State two applications of GTO.
 - c) List the types of turn-off methods of SCR.
 - d) Draw circuit diagram of single phase centre tapped full wave controlled rectifier with R. load.
 - e) Define convertors and state it's types.
 - f) Define term Inverter.
 - g) Draw circuit diagram of light dimmer using DIAC - TRIAC

P.T.O.

- 2. Attempt any THREE of the following. 12**
- a) Draw V-I characteristics of SCR. Define holding current and latching current.
 - b) Describe the working of Battery charger using SCR.
 - c) Describe the working principle of stepdown chopper using power MOSFET.
 - d) With neat sketch describe the operation of pulse transformer used in triggering circuit of SCR.
- 3. Attempt any THREE of the following. 12**
- a) With help of circuit diagram and waveforms explain the working of single phase halfwave controlled rectifier with R-load.
 - b) Draw circuit diagram and input and out-put voltage waveforms of 3ϕ halfwave rectifier with resistive load.
 - c) Suggest the suitable type of Inverter to produce square wave output and write it's operation with neat diagram.
 - d) Draw block diagram of SMPS and state function of each block.
- 4. Attempt any THREE of the following. 12**
- a) Describe the working of class C commutation with neat circuit diagram and waveforms.
 - b) A single phase fully controlled rectifier supplied with voltage $V = 100 \sin 314 t$, $\alpha = 30^\circ$ and load resistance is 50Ω . Find average output DC voltage and load current.
 - c) Describe the working of step-up chopper with neat circuit diagram.
 - d) With help of block diagram explain working of ONLINE UPS system.
 - e) List different Turn ON methods of SCR and explain any one in details.

5. Attempt any TWO of the following.**12**

- a) Suggest a suitable power device having 1st and 3rd quadrant symmetrical characteristics and describe its operation with modes.
- b) State the need of protection circuit of SCR describe the working of snubber circuit with neat diagram.
- c) Draw full-wave controlled rectifier with R-L load with Free Wheeling diode. Explain the effect of free wheeling diode on the circle with output voltage waveforms.

6. Attempt any TWO of the following.**12**

- a) Describe the working of series Inverter with neat diagram and state its two applications.
 - b) Describe the working of LASCR with its constructional diagram and state its two industrial applications.
 - c) With help of circuit diagram and V - I characteristics explain working principle of UJT and state its two applications.
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