

17444

11920

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

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| 1. (A) Attempt any SIX of the following : | 12 |
| (a) Draw the symbol of LASCR & GTO and name the terminals. | |
| (b) Define Holding Current and Latching Current. | |
| (c) State two applications of GTO. | |
| (d) List methods to Turn-On SCR. | |
| (e) List two advantages of Pulse transformer. | |
| (f) Compare controlled and uncontrolled rectifiers. (any four points) | |
| (g) Define the terms firing angle and conduction angle. | |
| (h) Define Chopper and list its two applications. | |
| (B) Attempt any TWO of the following : | 8 |
| (a) Draw equivalent circuit of SCR using BJT and write equation for Anode Current. | |

- (b) Draw circuit diagram of 3-phase half wave controlled rectifier. Draw I/P & O/P waveforms.
- (c) Draw circuit diagram of light dimmer using TRIAC & DIAC. Draw output waveform.

2. Attempt any FOUR :**4 × 4 = 16**

- (a) Draw static V/I characteristics of SCR & label it properly indicating regions.
- (b) State the operating principle of IGBT and draw its V/I characteristics.
- (c) Draw circuit diagram of synchronized UJT triggering and write its working.
- (d) Draw circuit diagram of single phase half wave controlled rectifier with R load and write its working.
- (e) Write the equation for output voltage of step down chopper. Show the effect of firing angle change on output voltage.
- (f) Draw circuit diagram of low power flasher using SCR and write its working.

3. Attempt any FOUR of the following :**16**

- (a) Draw the construction of power transistor and draw its V/I characteristics indicating different regions.
- (b) Compare SCR & TRIAC (any six points).
- (c) Draw circuit diagram of RC triggering for SCR and write its working.
- (d) Draw circuit diagram of single phase centre tapped full wave controlled rectifier and write its working.
- (e) Define Inverter. Classify its types and state need of Inverter.
- (f) Draw circuit diagram of Battery charger using SCR and write its working.

4. Attempt any FOUR of the following : 16

- (a) Compare Enhancement and Depletion mode of MOSFET. (any four points)
- (b) Draw construction diagram of TRIAC and name its different operating modes.
- (c) Define Commutation. Draw circuit diagram of Class-C commutation.
- (d) Draw circuit diagram of Full Wave Controlled Bridge rectifier. Write its working.
- (e) Draw circuit diagram of Step-up Chopper using MOSFET and write its working.
- (f) Draw block diagram of SMPS and write function of each block.

5. Attempt any FOUR of the following : 16

- (a) Draw V/I characteristics of DIAC and list its two applications.
- (b) Draw circuit diagram of Class-A commutation. List its two disadvantages.
- (c) State the need of polyphase rectifier and write its two application.
- (d) State the concept of phase control in SCR and list its two applications.
- (e) Draw the circuit diagram of single phase half bridge Inverter and write its working.
- (f) Draw the circuit diagram of Emergency light using SCR and write its working.

6. Attempt any FOUR of the following : 16

- (a) Draw construction, V/I characteristics of SCS.
- (b) Draw a neat circuit diagram of Class-B commutation and give its operation.

- (c) Draw the circuit diagram of half wave controlled rectifier using RL load. State the need of free wheeling diode.
 - (d) Write the equation for output voltage of full wave controlled rectifier and indicate its operating mode.
 - (e) Define six performance parameters of Inverter.
 - (f) Define UPS. Draw block diagram of ON-LINE UPS. List two advantages over OFF LINE UPS.
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