

22326

22232

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.

Marks

1. Attempt any FIVE of the following :

10

- (a) Draw the V-I characteristics of Power Transistor.
- (b) Give the applications of IGBT.
- (c) Draw the symbol of UJT & LASCR.
- (d) Define triggering. List the types of Triggering methods.
- (e) Define conduction angle & firing angle.
- (f) State classification of phase controlled rectifier.
- (g) State the advantages of UPS.

2. Attempt any THREE of the following :

12

- (a) Explain two transistor analogy of SCR with neat diagram.
- (b) Explain synchronized UJT triggering with neat diagram.
- (c) With a neat sketch, explain the construction and working of MOSFET.
- (d) Draw and explain single phase full wave midpoint converter for resistive load.



- 3. Attempt any THREE of the following :** **12**
- (a) Explain the working principle of SMPS.
 - (b) Explain the circuit of Opto-coupler based triggering.
 - (c) Describe the operation of Snubber protection circuit with neat diagram.
 - (d) Draw and explain full bridge configuration with common cathode.
- 4. Attempt any THREE of the following :** **12**
- (a) Draw the circuit diagram and input/output waveforms of single phase half wave controlled rectifier connected to R-load.
 - (b) Describe emergency lighting system with neat diagram.
 - (c) Differentiate between Natural & Forced commutation.
 - (d) Give the operation of battery charger using SCR with neat diagram.
 - (e) Draw symbol & V-I. Characteristics of DIAC & TRIAC.
- 5. Attempt any TWO of the following :** **12**
- (a) Draw a symbol and neat labelled for V-I characteristics of GTD and explain its operation.
 - (b) Explain Auxiliary commutation with neat diagram. Also draw its waveforms.
 - (c) A single phase half controlled rectifier supplied with voltage $V = 100\sin 314t$ and load resistance of 50Ω . Find
 - (1) Average output dc voltage
 - (2) Load current for ($\alpha = 60^\circ$ & $\alpha = 120^\circ$)
- 6. Attempt any TWO of the following :** **12**
- (a) Explain in detail the crowbar protection circuit with neat diagram.
 - (b) With a neat circuit diagram explain the working of static AC circuit breaker using SCR.
 - (c) Justify with sketches the procedure to eliminate the reverse power flow in fully controlled rectifier with RL load.
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