

22326

23124

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) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) 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 the V-I characteristics of power transistor.
- (b) State the applications of power electronics.
- (c) Define forward break over voltage (VBO) of SCR.
- (d) Define triggering. List the types of Gate triggering methods.
- (e) Write the function of free wheeling diode.
- (f) Define transfer time and backup time of UPS.
- (g) State the requirements of SMPS.

2. Attempt any THREE of the following :

12

- (a) Describe with sketch the construction of IGBT.
- (b) Draw the V-I characteristics of SCR. Define :
 - (i) Latching Current
 - (ii) Holding Current



- (c) Explain $\frac{dy}{dt}$ triggering of SCR.
- (d) Explain with circuit diagram the operation of single phase full bridge controlled rectifier with R load.

3. Attempt any THREE of the following :

12

- (a) Explain two transistor analogy of SCR with a neat diagram.
- (b) Draw circuit diagram of UJT triggering of SCR. Draw waveform to show firing angle control.
- (c) Draw waveform of the following power electronic circuit. Also identify the name of the circuit. Refer Fig. No. 01

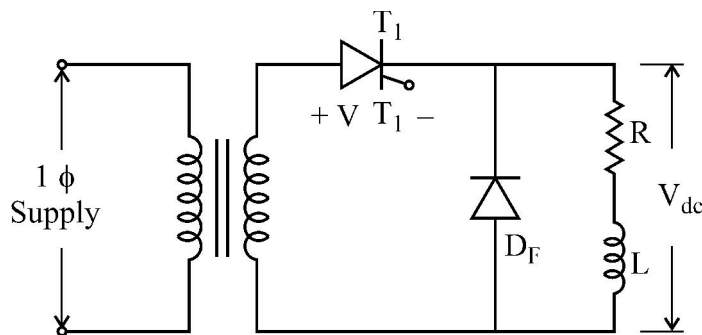


Fig. No. 01

- (d) Explain the operation of Burglar alarm system with diagram.

4. Attempt any THREE of the following :

12

- (a) Describe SCR mounting and cooling with neat sketch.
- (b) Explain the operation of RC triggering circuit with a diagram.
- (c) Draw a neat diagram of 1 ϕ half wave controlled converter with RL load. Give its operation.
- (d) Explain the operation of AC circuit breaker with circuit diagram.
- (e) Describe emergency lighting system with neat diagram.

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

- (a) State the different turn ON methods of SCR.
- (b) Explain in detail over voltage protection.
- (c) Draw symbol and characteristics of GTO, DIAC, PUT.

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

- (a) Define firing angle and conduction angle.
 - (b) State the effect of source inductance in controlled rectifier with waveform.
 - (c) State what is online & offline UPS.
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