21819

3 Hours / 70 Marks Seat No. | | | | | | | | |

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.

(8) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Attempt any FIVE of the following : **10**

(a) Give the applications of IGBT.

(b) What is the need of UPS ?

(c) Draw a neat circuit diagram of class F commutation.

(d) Define :

(i) Firing angle

(ii) Conduction angle

(e) How GTO is advantages over SCR ?

(f) State the main difference between PUT & UJT.

(g) Write the function of Freewheeling diode.

2. Attempt any THREE of the following : **12**

(a) Describe triggering of SCR using UJT relaxation oscillator.

(b) Draw the I-V characteristics of power transistor. Show all regions.

(c) With neat circuit diagram explain working of emergency light system.

(d) Compare SCR & TRIAC (any four).

3. Attempt any THREE of the following : **12**

(a) Explain with neat circuit diagram operation of temperature controller using SCR.

(b) Draw the circuit diagram of class-D commutation & explain its working.

(c) With neat constructional diagram write operating principle of PUT.

(d) Explain with circuit diagram of 1ϕ mid-point controlled rectifier with R-load.

4. Attempt any THREE of the following : **12**

(a) Draw a neat labelled I-V characteristics of SCR.

Define :

(i) Latching

(ii) Holding current

(b) Differentiate between Natural and Forced commutation (any four).

(c) Draw construction of IGBT. State any two applications of it.

(d) Explain with circuit diagram the working of 1ϕ halfwave controlled rectifier with R-L load.

(e) Draw a suitable circuit to control the speed of the motor using TRIAC and also give its operation.

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

(a) Draw a structure of TRIAC with doping levels. Write operating principle and give two applications of it.

(b) Draw the circuit diagram & waveforms of class A commutation. Explain its working.

(c) Draw & explain the working of 1ϕ mid-point controlled rectifier with RL-Load. Also Draw input-output waveforms of it.

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

(a) Draw full bridge & half bridge configuration with common cathode.

(b) Explain working of AC circuit breaker using SCR with circuit diagram.

(c) Draw symbol & V-I characteristics of

(i) LASCR

(ii) DIAC &

(iii) TRIAC
