

315340

25226

3 Hours / 70 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) Assume suitable data, if necessary.
 - (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) Define Inverter & give the classification of the Inverter.
- (b) State the advantage of SIT over SCR.
- (c) Draw the basic block diagram of AC voltage stabilizer.
- (d) State the control strategies used in chopper.
- (e) State the application of Inverter.
- (f) Draw the symbol of following component :
 - (i) MCT
 - (ii) FCT
- (g) Compare step-up & step-down chopper on the basis of
 - (i) Output voltage
 - (ii) Duty cycle



2. Attempt any THREE of the following : 12

- (a) Explain Type A chopper with circuit & waveform.
- (b) Explain the role of Heat Sink in thermal protection of SCR.
- (c) List out different types of stabilizers and explain servo type of stabilizer with suitable diagram.
- (d) Compare VSI & CSI with following :
 - (i) Input Source
 - (ii) Output controlled
 - (iii) Commutation circuit
 - (iv) Protection

3. Attempt any THREE of the following : 12

- (a) Explain the working of single phase current source inverter with Resistive load.
- (b) What is VFD ? Explain the block diagram of VFD.
- (c) Draw a neat circuit of Type D chopper and explain its operation with waveform.
- (d) Compare di/dt and dv/dt protection circuits used for Thyristers.

4. Attempt any THREE of the following : 12

- (a) Compare SIT & MCT with following :
 - (i) Switching speed
 - (ii) Advantages
 - (iii) Disadvantage
 - (iv) Application
- (b) Explain step-up chopper using MOSFET with waveform.
- (c) Explain the difference in switching patterns between 180° & 120° conduction mode in a three phase Inverter.

- (d) Explain the Relay type stabilizer with neat diagram.
- (e) State the function of charge controller in PV systems, also explain its Block Diagram.

5. Attempt any TWO of the following :

12

- (a) Explain working of three phase VSI with Resistive load for 180 conduction mode with circuit diagram.
- (b) What is pulse modulation ? List various PWM techniques & state how they differ from each other.
- (c) Explain the use of AC-to-AC converter in wind power generation with suitable diagram.

6. Attempt any TWO of the following :

12

- (a) State the types of SMPS & Explain Block Diagram of SMPS with its advantages over linear power supply.
 - (b) Explain the Block Diagram of Plug-in Electrical Vehicle (PEV), also compare PEV & PHEV.
 - (c) Compare online UPS & offline UPS on the basis of following specification.
 - (i) Input voltage Range
 - (ii) Output Frequency
 - (iii) Total Harmonic distortion
 - (iv) Load power factor
 - (v) Protection circuit used
 - (vi) Nature of output waveform
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