

22527

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.

Marks

1. Attempt any FIVE of the following :

10

- (a) Draw a neat sketch of IGBT.
- (b) Draw symbol and output V-I characteristics of FCT.
- (c) State the applications of MCT.
- (d) State the need of Inverter.
- (e) List the different types of Inverter.
- (f) State the effect of firing angle in dual converter.
- (g) Draw a neat circuit diagram of AC circuit Breaker.

2. Attempt any THREE of the following :

12

- (a) Draw a neat circuit diagram of type C chopper and explain its working.



- (b) Explain with a neat labelled sketch the operation of basic parallel inverter.
- (c) Describe the operation of single phase cyclo converter with a neat diagram.
- (d) Describe the operation of relay type AC voltage stabilizer with a neat diagram.

3. Attempt any THREE of the following :

12

- (a) List the various control techniques used in chopper and explain any one technique in detail.
- (b) Draw and explain working of single phase half bridge inverter.
- (c) Draw the circuit diagram of single phase dual converter and sketch the input/output waveforms.
- (d) Describe the working principle of dielectric heating with block diagram.

4. Attempt any THREE of the following :

12

- (a) Draw circuit diagram of four quadrant chopper and its labelled quadrant diagram.
- (b) Explain with a neat labelled diagram the working principle of the single phase parallel inverter.
- (c) Explain the operation of Battery charger control with a neat diagram.
- (d) Describe the operation of three phase to three phase cyclo convertor with neat circuit diagram.
- (e) Explain with circuit diagram the working principle of the circulating current mode dual converter.

5. Attempt any TWO of the following : 12

- (a) Explain the operation of Jones chopper with a neat circuit diagram. Draw the waveforms.
- (b) Describe the operation of close loop speed control method for DC servo motor with the help of diagram.
- (c) Explain the operation of MC-Murray Half bridge inveter with a neat circuit diagram.

6. Attempt any TWO of the following : 12

- (a) With a neat diagram, explain the operation of SIT and state two applications of SIT.
 - (b) With a neat circuit diagram and relevant waveforms describe the operation of Morgan Chopper.
 - (c) Discuss the method of overcoming the intermittent power flow in a basic series inverter. Illustrate your answer with relevant circuit and waveform.
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