

# 22430

**22223**

**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) What are the applications six and twelve pulses circuits.
  - b) State the meaning of inverse cosine method.
  - c) What is controlled and uncontrolled rectifier.
  - d) Give the classification of inverter.
  - e) What are types of Dual converters.
  - f) State the use of Heat sink circuits.
  - g) Give the specifications or ratings of thyristor.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the diagram of four quadrant chopper and explain.
  - b) Draw and explain three phase half wave controlled rectifier with inductive load.
  - c) Describe how firing circuit works.
  - d) Draw a neat circuit diagram of Jones chopper and explain.
- 3. Attempt any THREE of the following:** **12**
- a) Explain UJT firing circuit with a neat diagram.
  - b) Explain single phase series inverter with diagram.
  - c) Explain circulatory current free mode dual converter with a neat diagram.
  - d) State the applications of cycloconverter and explain the principle of cycloconverter.
- 4. Attempt any THREE of the following:** **12**
- a) Describe SCR parallel inverter with neat diagram.
  - b) Draw the diagram of double star controlled rectifier with resistive load.
  - c) Compare AC and DC chopper.
  - d) Draw a neat circuit diagram of single phase full bridge inverter and explain.
  - e) Compare single phase and three phase controlled rectifier.
- 5. Attempt any TWO of the following:** **12**
- a) Draw and explain Morgans chopper.
  - b) State the types of mounting techniques and explain any one in detail.
  - c) A Mc-Murray inverter uses a commutation circuit consisting of  $C = 200 \text{ pf}$  and  $L = 25 \text{ H}$  the source voltage is  $E_{dt} = 230 \text{ V}$ . The load current varies from  $50 \text{ A}$  to  $200 \text{ A}$  at instant of commutation. Find the value of turn off time  $E_{dt}$  minimum is  $10\%$  of  $E_{dt}$ .

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**Marks**

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

**12**

- a) Explain PLL oscillator pulse timing controlled firing circuit with neat diagram.
  - b) Draw single phase to single phase cycloconverter and explain its operation with waveforms.
  - c) Draw a neat diagram of 3 phase fully controlled rectifier and explain. (B load)
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