

17638

11819

3 Hours / 100 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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any THREE of the following: **12**
- (i) Describe two transistor analogy of SCR using neat sketch.
 - (ii) Compare single phase and 3 phase converter on basis of:
 - (1) Efficiency
 - (2) Ripple factor
 - (3) RMS value
 - (4) Average value
 - (iii) Describe the harmonic reduction by single pulse width modulation method.
 - (iv)
 - (1) Draw static AC circuit breaker.
 - (2) Draw static DC circuit breaker.

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- b) **Attempt any ONE of the following:** **6**
- (i) Draw V-I characteristics of:
- (1) DIAC
 - (2) TRIAC
 - (3) GTO
- (ii) Describe operation of parallel inverter with sketch and waveform. List two advantages.
- 2. Attempt any FOUR of the following:** **16**
- a) List various triggering method. Describe any one.
 - b) Draw and describe class 'A' chopper.
 - c) Define inverter give its classification.
 - d) State working principle of chopper with neat diagram.
 - e) Draw and describe mid point converter with resistive load. Draw its load voltage waveform.
- 3. Attempt any FOUR of the following:** **16**
- a) Compare class 'A' and class 'B' chopper. (any four points)
 - b) Describe speed control of DC series motor using step down chopper.
 - c) Draw V-I characteristics of SCR. Define latching current and holding current.
 - d) Describe half bridge inverter with neat diagram.
 - e) Draw and describe half wave converter with RL load.
 - f) Describe automatic street lighting circuit using SCR.

4. a) **Attempt any THREE of the following:** **12**
- (i) Describe induction heating control circuit.
 - (ii) Draw symbol of :
 - (1) IGBT
 - (2) SCR
 - (3) GTO
 - (4) SUS
 - (iii) Compare single phase inverter and 3 (three) phase inverter (any four)
 - (iv) Describe cycloconverter with neat diagram and waveform.
- b) **Attempt any ONE of the following:** **6**
- (i) Draw and describe single phase fully control bridge converter with RL load also draw its neat waveform.
 - (ii) Describe speed control of 3 phase induction motor with neat diagram and waveform (any one method)
5. **Attempt any FOUR of the following:** **16**
- a) Describe static VAR compensation system with neat diagram.
 - b) List any four specification of SCR.
 - c) Define duty cycle of chopper. Explain control technique used in chopper.
 - d) Describe closed loop speed control method for AC servo motor.
 - e) State effect of freewheeling diode on converter.
 - f) Draw circuit diagram of series inverter also draw it's voltage and current waveform.

6. Attempt any FOUR of the following:**16**

- a) Define firing angle and conduction angle. Show it on waveform and give relationship between them.
 - b) Describe electric welding control circuit.
 - c) List voltage control method of single phase inverter. Describe any one.
 - d) Define chopper. Give its classification.
 - e) Describe Jones Chopper with neat diagram.
 - f) Describe turn off process of SCR with neat voltage and current waveform.
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