



17541

16117

3 Hours / 100 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.*

Marks

1. A) Attempt **any three** : **12**
- a) State different types of protections required to ensure safety of power devices.
 - b) Draw the input and output waveform for DC to AC converter and DC to DC converter.
 - c) Draw McMurray Bridge Inverter Circuit.
 - d) State advantages, disadvantages and applications of isolated SMPS (any two points for each).
- B) Attempt **any one**. **6**
- a) Draw and explain two quadrant chopper.
 - b) Draw the circuit diagram of McMurray Bedford bridge inverter. Describe the operation of it with output voltage waveforms.
2. Attempt **any two**. **16**
- a) State the necessity of protection circuits. With neat diagram explain current foldback crowbar protection.
 - b) Explain with neat diagram parallel inverter with resistive load. Explain which commutation method is used in circuit.
 - c) State types of resistance welding. Explain spot welding.
3. Attempt **any four**. **16**
- a) Explain any one Snubber circuit for protecting SCR against dv/dt .
 - b) State the advantages of SMPS over linear regulators (two points). Give four applications.
 - c) Explain the operating principle of ONline UPS with block diagram.
 - d) Explain operating principle of resistance welding with neat diagram.
 - e) Draw circuit of Jone's Chopper and explain its working.

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- 4. A) Attempt any three.** **12**
- a) Give classification of chopper. Also list its applications (any four).
 - b) State the need of AC voltage regulator (stabiliser). Give its classification.
 - c) Draw the circuit diagram of parallel connections of three thyristors and describe with forward characteristics.
 - d) Draw circuit of single phase cyclo converter and explain.
- B) Attempt any one.** **6**
- a) Draw symbols of modern power devices SIT and MCT. Describe VI characteristic of any one.
 - b) Describe importance of PWM inverter. How can you reduce Harmonics with the help of this inverter ?
- 5. Attempt any two.** **16**
- a) Draw the circuit diagram of phase control method used in AC voltage stabilizer. Describe its operation. List two advantages, disadvantages and applications.
 - b) Draw neat labelled diagram of line contactor using SCR and explain its working.
 - c) Draw diagram of isolated SMPS describe its operation. Give any two advantages and disadvantages.
- 6. Attempt any four.** **16**
- a) Draw the constructional diagram of MCT and explain its operation.
 - b) Explain the operations of resonant type AC voltage stabilizer.
 - c) Draw block diagram of Line Interactive UPS and explain function of each block.
 - d) List advantages and disadvantages of resistance welding any two points each.
 - e) Define :
 - i) backup time
 - ii) power rating
 - iii) transfer time with respect to battery.
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