

[3 Hours]

[Total Marks: 80]

**NB.** Q.1 is Compulsory.  
Solve any three questions from the remaining  
Assume suitable data if required and justify it.

- Q.1** Solve the following 20
- Explain UJT characteristics
  - Write advantages of IGBT and MOSFET
  - Explain need of synchronizing circuit in converters
  - Draw the circuit of Jones Chopper and explain the commutation of main SCR
- Q.2**
- What is the difference between series and parallel inverter? Explain series inverter. 10
  - Explain the current fed ac drives & state its applications 10
- Q.3**
- With the help of a neat diagram and associated waveforms discuss the operation of Buck-Boost converter. Also list the advantages and disadvantages of this type of converter. 10
  - Explain variable frequency I.M. drive 10
- Q.4**
- Describe the working of 1phase fully controlled bridge with RL load. 10
  - Write a short note on reduction of harmonic distortion. 05
  - Briefly explain the V-I characteristic of IGBT. 05
- Q.5**
- Explain the induction heating process with examples. 10
  - Explain Step-up chopper with neat waveforms. 10
- Q.6**
- Draw the block diagram of brushless DC motor and explain it. 10
  - State the significant features of traction drive 05
  - Explain any one type of forced commutation 05

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