

Total No. of Questions :8]

[Total No. of Printed Pages :1

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## MEPS-301(C)

M.E./M.Tech., III Semester Examination, June 2016

### Power Controller (Elective-I)

Time : Three Hours

Maximum Marks: 70

**Note:** Attempt any five questions each question carry equal marks.

1. a) Draw the V-I characteristic of following:
  - i) SCR
  - ii) IGBT
  - iii) GTO
- b) List different firing schemes of thyristor and explain any one in detail.
2. a) Explain working of single phase and three phase inverter with and without freewheeling diode.
- b) Derive the expression for the Capacitance C used in dynamic equalizing circuit for n series connected SCR.
3. a) Explain design difference between voltages commutated and load commutated choppers.
- b) What is SMPS? Give its operating principle and applications.
4. a) What is PWM? What are different techniques of PWM? Explain any one.
- b) With necessary circuit diagram explain the working of current commutated chopper with different modes.
5. a) Explain the working of VSI for 120 degree mode.
- b) Write applications of inverters for HVDC systems.
6. a) Explain working of CSI with necessary circuit diagram.
- b) Write merits and demerits of CSI over VSI.
7. a) Explain working of resonant chopper.
- b) Explain the concept of power quality. Explain power quality improvement in brief.
8. a) Explain working principle of cycloconverter. For step up and step down operation.
- b) With the help of phasor diagram explain how to regulate reactive power and improve power factor of system using SVC.