*Total No. of Questions : 8]* *[Total No. of Printed Pages : 2*

**Roll No** .....

# MEPS-301(C)

## M.E./M.Tech., III Semester

Examination, December 2016

## Power Controller (Elective-I)

***Time : Three Hours***

***Maximum Marks: 70***

***Note:*** i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Explain the constructional details of MOSFET and characteristics. 7

   b) Explain the applications of following power semiconductor devices i.e. SCR, GTO, MOSFET, BJT, IGBT and MCT's. 7

2. Explain how input power factor can improve and reduce the harmonics levels in phase controlled converters. Explain any one method in detail. 14

3. Explain with circuit diagram and draws current and voltage waveforms for voltage-commutated chopper. 14

4. Explain with circuit diagram and voltage waveforms for 180° mode for three phase voltage source inverter. 14

5. Explain the working of three phase dual converter and plot waveforms of converters voltage, load voltage, reactor voltage, load current and circulating current. 14









6. Explain in short

   a) Use of freewheeling diode in single phase half wave circuit with R-L load. 7

   b) Effect of source impedance on re-performance of single phase and three phase converters. 7

7. What are the different methods for reduction of harmonics in the single phase inverter. Explain any one method. 14

8. Short notes (any two): 2×7=14

   a) Concept of power quality

   b) SMPS

   c) Effect of harmonics in inverter

   d) Series parallel operations of SCR

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