

Roll No.

24229

B. Tech. 5th Sem. (EE)

Examination – December, 2016

POWER ELECTRONICS

Paper : EE-317-F

Time : Three Hours] [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note: Attempt five questions. Question No. 1 is compulsory and one from each Section. All questions carry equal marks.

1. (a) Discuss in brief about over voltage and over current protection for SCR.
- (b) Discuss in brief about power factor improvement techniques.
- (c) Compare voltage source inverter with current source inverter.

- (d) Explain stator frequency control method of speed control of three phase induction motors. 5×4

SECTION - A

2. (a) Explain construction details and working of power MOSFETs. 10
(b) Discuss in detail about any two types of firing circuits for SCRs. 10
3. (a) Draw circuit diagram and discuss V-I characteristics of (i) TRIAC (ii) SIT. 10
(b) Discuss Class C and Class F SCR commutation techniques. 10

SECTION - B

4. Explain the operation of three phase regulator with resistor load. Draw the output voltage and current waveform for $\alpha = 60^\circ$. 20
5. Write short notes on : 10, 10
(i) Synchronous Tap Changers
(ii) MOSFET based converter

SECTION - C

6. (a) Draw power circuit diagram and discuss various modes of operation for voltage commutated chopper. 10
(b) Write in detail about different operating modes for modified Mc Murray-Bedford half bridge inverter. 10
7. Discuss in detail about parallel and series inverters. 20

SECTION - D

8. Write in detail about : 10, 10
(i) Static Kramer drive system
(ii) Static Scherbius drive system
9. (a) Draw schematic diagram and basic circuit configuration for three phase to single phase cycloconverters and explain its operation. 14
(b) Discuss in brief about single phase to single phase cycloconverter. 6