

Total No. of Questions : 8]

SEAT No. :

P1734

[5058]- 368

[Total No. of Pages : 2

**T.E. (E & TC Engineering)
POWER ELECTRONICS
(2012 Pattern) (Semester - II)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) *Draw neat diagrams and waveforms wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of nonprogrammable calculators is allowed.*
- 5) *Assume suitable data, if necessary.*

- Q1)** a) Draw and Explain steady state characteristics of IGBT. [7]
b) Explain triggering circuit for SCR using IC 785. [6]
c) Draw neat circuit diagram and explain single phase full bridge inverter with R-L load. Explain the effect of FWD on the operation of it. [7]
- Q2)** a) Explain with circuit diagram and waveforms three phase inverter with 180 degree conduction mode. [7]
b) Draw and Explain the Steady State characteristics of SCR. [6]
c) Draw the circuit diagram of three phase Semi converter with R load. Explain its operation. Draw the output voltage waveform. [7]
- Q3)** a) What is DC to DC converter? Explain 4 Quadrant Chopper with circuit diagram & waveforms. [9]
b) Draw the circuit diagram of single phase AC Voltage controller with R load. Explain its operation. Draw the waveform of output voltage. [9]

P.T.O.

- Q4) a)** In a dc chopper, the average load current is 30 Amps, chopping frequency is 250Hz, supply voltage is 110 volts. Calculate the ON and OFF periods of the chopper if the load resistance is 2 ohms. [8]
- b) Draw the block schematic of SMPS and explain its advantages over Linear Power Supply. [10]
- Q5) a)** Explain OFF-line UPS with neat block-diagram. State its specifications and applications. [6]
- b) Explain with circuit diagram working of single phase separately excited DC motor drive. Draw neat waveforms across load. [10]
- Q6) a)** What are AC drives? Explain with block diagram, speed control technique of three phase Induction motor by using V/F method. [8]
- b) Write short notes on: [8]
- i) Electronic ballast and
 - ii) Battery Charger
- Q7) a)** Explain SLR half bridge DC/DC converter with neat circuit diagram and Waveforms. [8]
- b) What is EMI? Explain different sources and minimizing techniques of EMI. [8]
- Q8) a)** Explain with circuit diagram and neat waveforms ZCS resonant converters. [10]
- b) Explain overvoltage and over current protection circuits. [6]

