Total No. of Questions : 8]

SEAT No. :

P1734

[Total No. of Pages : 2

[5058]- 368
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]**