Total No. of Questions : 8]

SEAT No. :

P 3287

[Total No. of Pages : 2

[5353] - 160

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 and Q.7 or Q.8.***
2) ***Draw neat diagrams & waveforms wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of nonprogrammable calculator is allowed.***
5) ***Assume suitable data wherever necessary.***

Q1) a) Draw and Explain steady state characteristics of IGBT. **[7]**

b) Explain gate/base drive circuit for Power MOSFET. **[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]**

OR

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 - L load. Explain its operation. Draw the output voltage waveform. **[7]**

Q3) a) What is DC to DC converter? Explain 2 Quadrant 'Class C' 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]**

OR

P.T.O

Q4) a) In a dc chopper, the average load current is 30 Amps, chopping frequency is 250 Hz, 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 Full Converter separately excited DC motor drive. Draw neat waveforms across load. **[10]**

OR

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]**

OR

Q8) a) Explain with circuit diagram and neat waveforms ZCS resonant converters. **[10]**

b) Explain over voltage and over current protection circuits. **[6]**

ⓘⓘⓘ