

Total No. of Questions : 8]

SEAT No. :

P2437

[Total No. of Pages : 2

[5253] - 160

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

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) *Draw neat diagrams & waveforms wherever necessary.*
- 3) *Figures to right indicate full marks.*
- 4) *Use of nonprogrammable calculators is allowed.*
- 5) *Assume suitable data wherever necessary.*

- Q1)** a) Draw and Explain steady state characteristics of IGBT. [7]
b) Explain two transistor analogy of an SCR. Drive anode current equation of SCR. [6]
c) Draw neat circuit diagram and explain single phase full bridge converter with R-L load. State different performance parameters of the same. [7]

OR

- Q2)** a) Explain with circuit diagram and waveforms three phase inverter with 120 degree conduction mode. [7]
b) Draw and Explain the switching characteristics of SCR. [6]
c) Draw the circuit diagram of three phase Half Controlled Bridge converter with R load. Explain its operation. Draw the output voltage waveform for firing angles 30 degree & 60 degree. [7]

- Q3)** a) What is DC to DC converter? Explain Step — down Chopper (highly inductive load) with circuit diagram & waveforms. Also derive output voltage equation. [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

- Q4)** a) Input to the step up chopper is 200 V. The output required is 600 V. If the conducting time is 200 μ sec, compute Chopping frequency. If the pulse width is halved for constant frequency of operation, find the value of new output voltage. [9]
b) Draw the block schematic of SMPS and explain its advantages over Linear power supply. [9]

P.T.O.

- 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]

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) Explain dv/dt di/dt and snubber circuit in detail. [8]

OR

- Q8) a)** Explain with circuit diagram and neat waveforms ZVS resonant converters. [10]
b) Explain overvoltage and over current protection circuits. [6]

