Total No. of Questions : 10]

SEAT No. :

P2389

[Total No. of Pages :2

[4758] - 548
T.E. (Electrical)
POWER ELECTRONICS
(2012 Course) (End - Sem.) (Semester - I)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) What type of triggering is used in SCRs? Explain R & RC triggering. **[5]**

b) Explain characteristics of GTO. **[5]**

OR

Q2) a) Explain over voltage & over current protections for SCR. **[5]**

b) For 1ph full controlled bridge rectifier, calculate rectification efficiency, for Resistive load. **[5]**

Q3) a) Explain working of Triac as light dimmer switch. **[5]**

b) What is current source converter? Explain its operation. **[5]**

OR

Q4) Explain operation of 3ph half controlled bridge converter feeding RL load. Draw output voltage waveform for α = 30° & write output voltage expression. **[10]**

Q5) a) Draw VI chara. of MOSFET & explain its control. **[8]**

b) Draw step down chopper circuit & explain with expression for output voltage interms of control parameter. **[8]**

OR

P.T.O.

Q6) a) Explain VI chara. of MCT & give applications. **[8]**

b) A step down chopper feeding load with R = 10Ω and L = 5 mH from 220V supply at 500 Hz and 30% duty. Calculate average output voltage and av. current. Find I_{max} & I_{min} if % ripple is 10%. **[8]**

Q7) a) Explain 1ph. full bridge voltage source inverter. Derive output voltage expression for RL load. Draw relevant waveforms. **[8]**

b) Explain Sinusoidal PWM Technique for Inverters. Using 5 pulses /half cycle. Comment on harmonics in output voltage. **[8]**

OR

Q8) a) Explain working of 1ph full bridge inverter generating quasisquare wave in output, across inductive load. Draw waveform & explain. **[10]**

b) Explain Multiple pulse PWM used in inverters. What is its advantage over single pulse PWM? **[6]**

Q9) a) Explain 3ph. 120º mode conduction VSI operation with control signals & output phase voltage waveforms for 3ph. resistive star connected load. **[10]**

b) Explain voltage control & harmonic elimination techniques used in inverters. **[8]**

OR

Q10)a) Explain cascaded Multilevel inverter using 3H- bridges connected to V input supply. Draw output voltage waveforms. **[10]**

b) Compare: **[8]**

i) Multipulse and Multi level inverters.

ii) VSI & CSI.