Total No. of Questions :6]

SEAT No. :

P91

[Total No. of Pages :2

APR. -16/TE/InSem. - 23
T.E.(E & TC Engineering)
POWERELECTRONICS
(2012 Pattern) (Semester - II)

Time : 1Hour] *[Max. Marks :30*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q6.***
2) ***Neat diagrams and waveforms must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Use of nonprogrammuable calculator is allowed.***
5) ***Assume suitable data if necessary.***

Q1) a) Draw & explain two transistor analogy of SCR. **[6]**

b) For an SCR, the gate cathode characteristics has a straight line slope of 130.For triggering source voltage of 15v and allowable gate power dissipation of 0.5W,calculate the gate series resistance(Rg). **[4]**

OR

Q2) a) Draw construction diagram of n-channel enhancement type MOSFET and explain its steady state characteristics. **[5]**

b) Compare power MOSFET with SCR. **[5]**

Q3) a) Draw & explain single phase fully controlled bridge converter for R-L load with various o/p voltage waveforms. **[7]**

b) A single phase semi converter is operated from 120V, 50Hz AC supply.The load is resistive having resistance of 15Ω .If the average output voltage is 25% of the maximum possible average output voltage, determine the firing angle(α). **[3]**

OR

Q4) a) Draw & explain three phase half controlled bridge converter for R load with o/p voltage waveforms. **[7]**

b) Explain the significance of free wheeling diode in controlled rectifiers.**[3]**

P.T.O.

Q5) a) Draw & explain single phase full bridge inverter for R-L load with o/p voltage & current waveforms. **[6]**

b) Single phase full bridge inverter is operated from 48V dc supply,it has a resistive load of R = 2.4 Ω. Find its. **[4]**

i) Output power(Po)

ii) Total harmonic distortion(THD)

OR

Q6) Explain 120° mode in three phase inverters for balanced star R load with circuit diagram in detail. **[10]**