

Total No. of Questions : 6]

SEAT No. :

**P4920**

**T.E./Insem.- 124**

[Total No. of Pages : 2

**T.E. (Electrical) (Semester - I)**

**POWER ELECTRONICS**

**(2012 Pattern)**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates:*

- 1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Use of calculator is allowed.*
- 5) *Assume suitable data if necessary.*

**Q1) a)** Draw and Explain Turn on Characteristic of thyristor. **[5]**

b) Explain any five specifications of thyristor. **[5]**

OR

**Q2) a)** With a neat diagram explain the working and advantages of GTO. **[5]**

b) Explain the R-C triggering circuit of thyristor with neat circuit diagram and output waveforms. **[5]**

**Q3) a)** Explain the operation of single phase fully controlled bridge converter with RL load. Draw waveforms of output voltage and current for  $\alpha = 60^\circ$  with continuous conduction. **[6]**

b) A single phase center tapped full wave controlled rectifier has a supply voltage 230V connected to R load. Determine the average output voltage for firing angle of  $0^\circ, 30^\circ, 60^\circ$ . **[4]**

OR

**Q4) a)** Explain the effect of source inductance on the performance of single phase fully controlled converter. Derive an expression for voltage drop due to source inductance. **[8]**

b) Differentiate between 'half wave converter' and 'half controlled converter'. **[2]**

**P.T.O.**

- Q5)** a) Explain with output waveforms, the operation of three phase half wave controlled converter with resistive load. [5]
- b) With neat circuit diagram and output waveforms explain working of single phase full wave ac voltage regulator with R load. [5]

OR

- Q6)** a) Compare SCR with TRIAC. [4]
- b) Discuss the working of two stage sequence control of voltage regulator. Draw output waveform for R load. [6]

