

Total No. of Questions : 06]

SEAT No. :

**P19**

[Total No. of Pages : 2

**Oct.-16/TE/Insem. - 18**

**T.E. (Electrical)**

**Power Electronics**

**(2012 Pattern) (Semester-I)**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates:*

- 1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.*
- 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 switching characteristics of SCR and explain reverse recovery phenomenon. [6]

b) Explain latching of SCR using two transistor analog. [4]

OR

**Q2)** a) What are the turn on methods of SCR? Which is the most preferred method? Why? [5]

b) Explain with a diagram UJT triggering method of SCR. [5]

**Q3)** a) Explain with circuit diagram and output waveforms, working of single phase half wave controlled rectifier feeding RL load with Free Wheeling Diode(FWD). [5]

b) Explain with circuit diagram and output waveforms working of single phase fully controlled bridge converter feeding RLE load. [5]

OR

**Q4)** a) Explain single phase dual converter with circulating current mode. State the disadvantages of circulating current. [5]

b) Explain the concept of overlap angle and associated voltage drop in single phase converter with RL load. [5]

*P.T.O.*

**Q5) a)** For a three phase fully controlled bridge converter, draw circuit diagram and output waveforms for  $\alpha = 60^\circ$  for R load and write the expression for average output voltage. [5]

b) Explain the operation of TRIAC in all the four modes. [5]

OR

**Q6) a)** For a three phase semi converter draw circuit diagram and output waveforms for R load and write the expression for average output voltage. [6]

b) For single phase AC voltage regulator with RL load [4]

i) Draw circuit diagram

ii) Draw output voltage waveform for firing angle of  $120^\circ$

