

Total No. of Questions : 6]

SEAT No. :

P5080

[Total No. of Pages : 2

**T.E./Insem.-628**  
**T.E. (Electrical)**  
**POWER ELECTRONICS**  
**(2015 Pattern)**

*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 indicate full marks.*
- 4) *Use of calculator is allowed.*
- 5) *Assume suitable data if necessary.*

**Q1)** a) Describe the different modes of operation of SCR with the help of V-I characteristic. **[5]**

b) Explain the following specifications of the thyristor. **[5]**

i)  $dv/dt$ .

ii)  $di/dt$ .

iii)  $I^2t$ .

OR

**Q2)** a) Explain the full wave R-C triggering circuit of Thyristor with the help of neat circuit diagram and output waveforms. **[6]**

b) Why is the reverse breakdown voltage greater than the forward breakdown voltage in SCR? **[4]**

**Q3)** a) Draw and explain the switching characteristics of IGBT. **[5]**

b) What is duty cycle of chopper and explain PWM & FM techniques of voltage control. **[5]**

OR

**P.T.O.**

- Q4)** a) Compare between Power MOSFET and BJT. [4]  
b) Write short note on Class E Chopper. [6]

- Q5)** a) Explain the working of single phase semi converter bridge with RL load. Derive the expression for output voltage. [5]  
b) With neat diagram explain the concept of overlap angle. Write formula to calculate voltage drop due to overlap. [5]

OR

- Q6)** a) Write short note on single phase dual converter. [5]  
b) Derive expression for average output voltage and rms output voltage of a single phase fully controlled bridge converter with RL load (Assume continuous conduction). [5]

