

Total No. of Questions : 6]

SEAT No. :

**P18**

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

[Total No. of Pages : 1

**T.E. (Electronics)**

**ELECTRICAL MACHINES & POWER DEVICES**

**(2012 Course) (Semester - I) (304201)**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates:*

- 1) *Answer Q1 or Q2, Q3 or Q4 and Q5 or Q6.*
- 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)** Draw and Explain the basic structure and switching characteristics of power diode in detail? [6]

b) Write a short note on thermal runaway and explain V-I characteristic of power BJT? [4]

OR

**Q2) a)** Explain the basic structure, operation and static characteristic of power IGBT? [6]

b) What is mean by SOA? Explain FBSOA and RBSOA for MOSFET [4]

**Q3) a)** Write a short notes on: GTO [6]

b) What are the different turn-on methods of SCR? Explain it. [4]

OR

**Q4) a)** Explain the two-transistor analogy of SCR? Derive an expression for anode current  $I_A$ . [6]

b) Compare SCR, TRIAC, and DIAC. [4]

**Q5) a)** Write a short note on: [6]

i) Selenium diode

ii) MOV

b) Explain the working of semiconductor fuse? How it protects the device? [4]

OR

**Q6) a)** What is EMI? What are the sources of EMI? How can the EMI generation be minimized? [6]

b) Explain different cooling methods used for power devices? [4]

