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**Question Paper Code : 51531**

**B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016**

**Fifth Semester**

**Electronics and Instrumentation Engineering**

**EI 2301/EI 51/10133 EI 504 – INDUSTRIAL ELECTRONICS**

**(Regulations 2008/2010)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. Draw symbol of :
  - (a) SBS
  - (b) GTO.
2. Draw I-V characteristics of power transistor and label different region.
3. State the applications of dual converter.
4. List any two differences between cyclo converter and ac voltage controller.
5. Differentiate Series and Parallel inverter.
6. Write the applications of step up chopper.
7. Draw a two quadrant dc drive circuit.
8. What is meant by self control of synchronous motor drive ?
9. Differentiate between online and offline UPS.
10. What is meant by slip power recovery ?

**PART – B (5 × 16 = 80 Marks)**

11. (a) (i) Draw a neat sketch of IGBT showing its construction details also draw its V-I characteristics. Write the necessary condition to turn on the SCR and turn off the SCR. (8)
- (ii) Draw the V-I characteristics of a TRIAC and describe four operating mode of TRIAC. (8)

**OR**

- (b) (i) Draw and explain the GTO and MCT characteristics. (8)
- (ii) Draw two transistor analogy of SCR and describe its working. (8)
12. (a) (i) Explain the operation of single phase semi converter with RL load. (10)
- (ii) A single phase full converter connected to an a.c. supply of 230 V, 50 Hz is used to supply a highly inductive load with constant load current. Calculate the average load voltage for firing angle of 30 degree and 120 degree. (6)

**OR**

- (b) Explain the operation of three phase Full converter with R load. Compare its quadrant of operation with R and R L load. (16)
13. (a) (i) Compare voltage source inverter and current source inverter. (8)
- (ii) Explain the working of a parallel inverter. (8)

**OR**

- (b) With neat diagrams, explain the working of class A, B, C and D chopper circuits. (16)
14. (a) With necessary circuit diagrams, explain the dynamic braking of a separately excited DC motor drive under the following cases :
- (i) Convener fed
- (ii) Chopper fed. (16)

**OR**

- (b) With necessary diagrams, explain the self control of Synchronous motor drive. (16)
15. (a) With a neat sketch explain the principle, working and applications of induction and dielectric heating. (16)

**OR**

- (b) (i) Explain in detail about digital counters. (8)
- (ii) Explain about voltage regulators with a neat sketch. (8)