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**Question Paper Code : 21424**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Electronics and Instrumentation Engineering

EI 2301/EI 51/10133 EI 504 — INDUSTRIAL ELECTRONICS

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the symbol of
  - (a) IGBT
  - (b) SBS
2. Draw I-V characteristics of power transistor and level different region.
3. Differentiate full wave and half wave rectifiers.
4. Define commutation and specify all type for commutation.
5. What are the merit and demerits of cyclo converter?
6. List down the applications of choppers.
7. Mention about the speed torque characteristics of induction motors.
8. Differentiate between online and offline UPS.
9. What are the different type of voltage regulators?
10. What is meant by slip power recovery?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw two transistor analogy of SCR and describe its working. (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. (10)
- (ii) Draw 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. (6)
12. (a) (i) Draw and explain center tapped full wave controlled rectifier with RL load. Also draw input/output waveform. (10)
- (ii) Draw the circuit and write drawback of half controlled rectifier. (6)

Or

- (b) (i) Draw and explain the circuit and waveshape of single phase Fullwave Bridge controlled rectifier with resistive load. (12)
- (ii) Compare controlled and uncontrolled rectifier (Any four points). (4)
13. (a) Draw and explain the circuit diagram of series and parallel inverter. Describe its working principle. (16)

Or

- (b) (i) Draw circuit of step down and step up chopper. State how O/P is related to duty cycle. (8)
- (ii) What is commutation? Describe operation of class C commutation with circuit diagram and wave shape and state its applications. (8)
14. (a) With a neat diagram explain the operation of self controlled synchronous motor. (16)

Or

- (b) (i) Explain about regenerative and dynamic braking. (8)
- (ii) Explain in detail about static stator voltage control. (8)

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)
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