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L1B
21.1.16 AN

Question Paper Code : 21531

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

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 level different region.
3. Differentiate full wave and half wave rectifiers.
4. Specify the need for dual converters.
5. Differentiate between single phase and three phase.
6. List down the applications of ac choppers.
7. Mention about the speed torque characteristic of induction motors.
8. Draw the speed torque characteristic of induction motor.
9. What are the different type of voltage regulators?
10. Differentiate between online and offline UPS.

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) 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) With the suitable diagram explain in detail about half controlled and fully controlled converters. (16)
13. (a) Draw and explain the circuit diagram of series and parallel inverter. Describe its working principle. (16)

Or

- (b) (i) Draw the circuit of step down and step up chopper. State how O/P is related to duty cycle. (8)
- (ii) Explain in detail about Class A, B chopper classification. (8)
14. (a) With a neat diagram explain the in detail about control of DC motor using conveters and choppers. Also specify the steady state characteristic of DC motors. (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)