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**Question Paper Code : 11413**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Sixth Semester

Electrical and Electronics Engineering

EE 1353 A — POWER ELECTRONICS

(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Why IGBT is called voltage controlled device?

2. What is snubber circuit?

3. What is the function of freewheeling diodes in controlled rectifiers?

4. What is called as overlap angle?

5. What are the advantages of current commutated chopper?

6. Define duty cycle.

7. Write the differences between CSI and VSI.

8. What are the methods to reduce harmonic content?

9. Give some disadvantages of half wave AC voltage controller.

10. What is the control range of firing angle in ac voltage controller with RL load?

PART B — (5 × 16 = 80 marks)

11. (a) Explain briefly about the static and dynamic characteristics of SCR.

Or

(b) (i) Explain the basic structure and V-I characteristics of power diodes with neat diagram.

(ii) Explain the construction and V-I characteristics of TRIAC with neat diagram.

12. (a) Explain briefly with circuit diagram, waveforms and working of series and parallel inverters.

Or

(b) Explain with necessary circuit diagrams, waveforms and working of a 3 phase fully controlled converter. Derive the expressions for load voltage and load current.

13. (a) Explain with necessary circuit diagrams and waveforms of a single phase bridge type cycle converter.

Or

(b) Classify the basic topologies of switching regulators and explain the operation of buck regulator with continuous load current using suitable waveform.

14. (a) What is DC chopper? Describe various types of chopper configuration with appropriate diagrams.

Or

(b) What is AC regulator and draw the configuration of a single phase AC regulator and explain the operation?

15. (a) Explain briefly about the three phase bidirectional delta connected controllers with neat diagrams.

Or

(b) Explain briefly about the three phase full wave controller with neat diagrams.