Reg. No. | | | | | | | | | | | | |

Question Paper Code : 57323

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

Fifth Semester

Electronics and Instrumentation Engineering

EE 6503 – POWER ELECTRONICS

(Common to Mechatronics Engineering, Instrumentation and Control Engineering, Electrical and Electronics Engineering)

(Regulations 2013)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define Holding current and Latching current in SCR.
2. Draw the two transistor model of SCR.
3. What are the effects of source inductance ?
4. What are the functions of freewheeling diode ?
5. What is meant by PWM control in DC Chopper ?
6. Define Duty Cycle.
7. Compare CSI and VSI.
8. What are the applications of Inverter ?
9. What is integral cycle control ?
10. What are the different control techniques for AC regulator ?

PART – B (5 × 16 = 80 Marks)

11. (a) Explain the structure, different modes of operation and characteristics of Triac. **(16)**

OR

(b) Explain the operating principle of a thyristor in terms of the "two transistor analogy". **(16)**

12. (a) Explain the operating principle of a single phase full controlled bridge converter. **(16)**

OR

(b) Explain the operating principle of three phase dual converter with necessary waveforms. **(16)**

13. (a) Explain the working of Buck-Boost converter with a neat schematic diagram and waveforms and also derive the source voltage and current expression for the same. **(16)**

OR

(b) Discuss in detail, the voltage commutated chopper. **(16)**

14. (a) With the neat sketch and output waveforms, explain the operation of three phase bridge inverter in 120 degree mode of operation. **(16)**

OR

(b) Explain the single phase current source inverter. State the merits and demerits of them. **(16)**

15. (a) Explain the working of three phase to single phase cycloconverter with neat circuit diagram and necessary waveforms. **(16)**

OR

(b) Discuss in detail, the operation of single phase full wave A.C. voltage regulator with help of voltage and current waveform for various loads. **(16)**
