

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. $PART - A (10 \times 2 = 20 \text{ Marks})$

- 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?

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$PART - B (5 \times 16 = 80 Marks)$

| 11. | (a) | Explain the structure, different modes of operation and characteristics of Triac. | (10) |
|-----|-----|--|------|
| | | OR | |
| | (b) | Explain the operating principle of a thyristor in terms of the "two transistor analogy". | (16) |
| | | BINESEMBANA DROBER EXAMINATION AND ALBORATION | |
| 12. | (a) | Explain the operating principle of a single phase full controlled bridge converter. | (16) |
| | | OR OR | |
| | (b) | Explain the operating principle of three phase dual converter with necessary | |
| | | waveforms. | (16) |
| | | Electrical and Electrical and Electrical and Engineerings | |
| 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 | (16) |
| | | Same. | (10) |
| | | 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 | |
| 14. | (a) | 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) |
| | | What is mixed by PWM remodels DC Charges V | |
| 15. | (a) | Explain the working of three phase to single phase cycloconverter with neat | - 01 |
| | | 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) |
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