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Question Paper Code: 12054

M.E. DEGREE EXAMINATION, DECEMBER 2013.

First Semester

Power Electronics and Drives

01PPE103 - ANALYSIS OF INVERTERS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is the purpose of employing PWM techniques in inverters?
2. Define Total Harmonic Distortion.
3. What is meant by Harmonic elimination techniques?
4. What is the purpose of feedback diode in an inverter?
5. What is PWM inverter? What are its limitations?
6. Mention the advantages of multilevel inverters.
7. Define Level in multilevel inverters.
8. What is ASCI inverter?
9. What is a parallel resonant inverter?
10. What is ZVS in resonant inverters?

PART - B (5 x 14 = 70 Marks)

11. (a) Discuss the various PWM techniques with neat waveforms. (14)

Or

(b) Explain the operation of single phase half and full bridge inverters with neat waveforms. (14)

12. (a) Explain space vector modulation technique for three phase inverters. (14)

Or

(b) With the help of neat circuit diagram and waveforms, explain briefly the working of transistorized three phase bridge inverter with resistive load in (i) 180° conduction mode and (ii) 120° conduction mode. Also compare the two conduction modes. (14)

13. (a) Draw and explain the operation of single phase capacitor commutated current source inverter with resistive load. Draw also the related voltage and current waveforms. (14)

Or

(b) Discuss the operation of current source inverter with neat waveforms. Also compare the current source inverters with voltage source inverters. (14)

14. (a) Discuss working of a 5 level diode clamped multilevel inverter. (14)

Or

(b) Discuss the features of multilevel inverters. Also discuss any two applications of multilevel inverters. (14)

15. (a) With the help of neat circuit diagram and waveforms explain the operation of Class E resonant inverters. Also list the advantages and limitations of this inverter. (14)

Or

(b) Explain the operation of series resonant inverter with neat diagrams. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Explain any one type of forced commutated thyristor inverter with neat waveforms. (10)

Or

(b) Explain the operation of resonant DC link inverter. Evolve 3 phase resonant DC link inverter. Discuss the application of this type of inverter (10)