Register Number…….

M.E. DEGREE EXAMINATIONS: DECEMBER 2009

First Semester

POWER ELECTRONICS AND DRIVES

PED504: Analysis of Power Inverters

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

Answer ALL the Questions:-

PART A (10 x 2 = 20 Marks)

1. Compare half bridge and full bridge single phase inverters.
2. Give any two advantages of PWM techniques used to control voltage in 1Φ inverters.
3. Compare 120^o and 180^o mode of operations of 3 phase bridge inverters.
4. Name the voltage control methods for three phase inverter.
5. Mention the most popularly used forced commutated inverter.
6. Differentiate between voltage and current source inverters.
7. List the types of multilevel inverters.
8. List any two applications of multilevel inverters
9. What are resonant converters?
10. What are the advantages of ZCS resonant converters?

PART B (5 x 16 = 80 Marks)

11. a) With neat power circuit diagram, explain the various modes of operation of any one forced commutated thyristor inverter.

(OR)

b) (i) What is the need for voltage control of single phase inverters? (6)

(ii) Explain in detail the multiple pulse modulation technique with necessary waveforms. (10)

12. a) Explain the operation of 120^o degree mode VSI with resistive load using relevant waveforms.

(OR)

b) A three phase inverter is supplied from a 600V source. For a star connected resistive load of 15Ω/phase, find the RMS load current, load power and the thyristor ratings for

(i) 120^o conduction and

(ii) 180^0 conduction mode.

13. a) Explain with power circuit diagram, operation of 1Φ CSI with R load.

(OR)

b) Explain the different modes of operation of 1Φ ASCI with relevant voltage and current waveforms.

14. a) Explain the operation of flying capacitor type multilevel inverter with suitable diagram.

(OR)

b) Discuss in detail, the cascade type multilevel inverter. List the advantages and disadvantages.

15. a) Discuss any one type of series resonant inverter with necessary waveform and circuit diagram.

(OR)

b) What are the parallel resonant inverters? Explain resonant dc link inverters with suitable diagram and waveforms.

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