Total No. of Questions : 12]

SEAT No. :

P1394

[Total No. of Pages : 3

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T.E. (Electronics)

POWER ELECTRONICS

(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) Explain the operation of 3Øfully controlled bridge converter with R-L load. Describe in detail the following modes of operation with associated waveforms. **[12]**

i) Rectifier mode

ii) Inverter mode

b) For 3Øfully controlled bridge converter with R-L load derive an equation for r.m.s output voltage. **[6]**

OR

Q2) a) What is dual converter? Explain in detail the operation of dual converter with Circulating current. List the advantage and disadvantage of the same. **[12]**

b) What is triggering? Give types of triggering? Explain microprocessor/ microcontroller based triggering. **[6]**

P.T.O.

Q3) a) What is DC to DC converter? Explain with circuit diagram & waveforms working of chopper? Why it is preferred over phase controlled converters. **[10]**

b) A D.C. chopper circuit connected to a 100V D.C. source supplies an inductive load having 40mH in series with a resistance of 5Ω. A freewheeling diode is places across the load. The load current varies between the limits of 10A and 12A. Determine **[6]**

i) Average value of load current.

ii) Maximum value of load current.

iii) The time ratio of the chopper.

OR

Q4) a) Explain working of SLR half bridge DC to DC converter along with waveforms. **[8]**

b) What is SMPS? Explain in brief. **[8]**

Q5) a) What is resonant converter? Explain the need of resonant converter. Give its Classification. **[8]**

b) Define cycloconverter. Explain basic principle of operation of cycloconverter with neat equivalent circuit diagram .State its advantages & disadvantages. **[8]**

OR

Q6) Write short notes on any three : **[16]**

a) 4 Quadrant chopper.

b) 2-quadrant type C chopper.

c) Inverse Cosine Method.

d) Matrix converter

SECTION - II

Q7) a) What are inverters? Explain with circuit diagram & waveforms, working 3Φvoltage source inverter operating in 120° mode with R-load. **[10]**

b) Explain the sinusoidal pulse width modulation tech used in inverter. **[8]**

OR

Q8) a) What is the need of cooling in industries? Suggest the remedies for reducing heating & power Dissipation in the Semi- conductordevices. **[10]**

b) What do you mean by Snubbers circuit? Give design of snubber circuit. **[8]**

Q9) a) Explain HF induction heating. **[8]**

b) What is the difference between soldering &welding? Explain at least one type of welding techniques. **[8]**

OR

Q10) a) What is HVDC? Explain advantage of HVDC over HVAC. **[10]**

b) What is CT/PT? Explain. **[6]**

Q11) a) What is importance of power factor? Explain the EAC method for PF improvement. **[10]**

b) Explain sequence control of series converters. **[6]**

OR

Q12) a) What is necessity of power quality? Explain with different types of power linedisturbances. **[8]**

b) What is energy audit? Explain the required procedure for energy audit. **[8]**

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