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Question Paper Code : 52499

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Fifth Semester

Electrical and Electronics Engineering

EE 2301 – POWER ELECTRONICS

(Common to Instrumentation and Control Engineering)

(Regulations 2008)

(Also Common to PTEE 2301 – Power Electronics for B.E. (Part-Time) Fourth Semester – EEE – Regulations 2009)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define 'Holding current' in a SCR.
2. Mention the uses of snubber circuit.
3. What is meant by extinction angle ?
4. Define 'line commutated inverter'.
5. What is meant by time ratio control in a chopper ?
6. Define resonant switching.
7. What are the advantages of PWM scheme ?
8. What are the conditions to be satisfied for series inverter operation ?
9. What is a cyclo converter ?
10. What is a Matrix converter ?



PART – B

(5×16=80 Marks)

11. a) i) Describe the turn on and turn off characteristics of SCR. (10)
ii) Explain the structure of IGBT. (6)
(OR)
- b) With neat sketch and waveforms explain the Current commutation technique of a SCR. (16)
12. a) Explain the operation of a single phase full converter with RLE load and discontinuous load current, with neat sketch and waveforms. (16)
(OR)
- b) i) Describe the operation of a single phase Dual converter in circulating current mode of operation. (12)
ii) A single phase full converter is supplied from 230V, 50 Hz source. The Load consists of $R = 25\Omega$ and a large inductance so as to make the load current constant. For a firing angle of 45° , determine the average output voltage and current. (4)
13. a) Discuss the operation of a Buck-boost converter. (16)
(OR)
- b) i) Explain the different control methods of chopper. (12)
ii) For type A chopper the source voltage is of 200V and the load resistance is of 10Ω . Take a voltage drop of 1V across the chopper when it is on. For a duty cycle of 0.4, calculate the average output voltage and current. (4)
14. a) Explain the working of a three phase inverter in 120 degree conduction mode. (16)
(OR)
- b) Explain the working of different PWM schemes for inverter control. (16)
15. a) Discuss the multistage sequence control in a single phase AC voltage controller. (16)
(OR)
- b) Explain the operation of a single phase to single phase cyclo-converter. (16)