Roll No. 17/05/2019

37134

Printed Pages : 3

BT–7 / M–19
POWER ELECTRONICS
Paper–ECE–405 N

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt any five questions, selecting at least one question from each unit.*

Unit–I

1. (a) What do you mean by power electronics converter ? Explain the various types of it in brief. 8

   (b) Explain the static and dynamic characteristics of IGBT. 7

2. (a) Draw the static drain characteristics and transfer characteristics curve for an N-channel enhancement type MOSFET. 8

   (b) Compare the switching characteristics of power MOSFETs and power transistors bringing out the advantages of one over the other. 7

Unit–II

3. (a) Discuss what would happen if gate is made positive with respect to cathode during reverse blocking of an SCR. 5

   (b) Draw and explain the forward characteristics of SCR using two transistor model of SCR. 5

(c) Show that string efficiency for two parallel connected SCRs is usually less than one. 5

4. (a) Explain the need of commutation in thyristor circuits. What are the different methods of commutation schemes ? Discuss one of them, involving two thyristor, with a neat schematic and waveforms. 8

(b) What is complementary impulse commutation ? Describe the type of commutation with a circuit diagram and appropriate waveforms. 7

Unit–III

5. (a) Explain the operation of a single phase full bridge converter with RL load for continuous and discontinuous load currents. 8

(b) Describe the operation of three phase full converter for different firing angles with the help of voltage and current waveform. 7

6. (a) Explain the classification of chopper with neat circuit diagram and waveform. 8

(b) Explain the working of single phase current source inverter. 7

Unit–IV

7. (a) What is an AC voltage controller ? List some of its industrial applications. Enumerate its merits and demerits. 8

(b) Draw the possible configurations of a single phase voltage controller and compare them. 7

8. (a) Describe and explain the operation of step up cycloconverter in detail. 8

(b) Explain the operation of a 3-phase cycloconverter. Draw the waveforms. 7

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