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Question Paper Code: 35301

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Electrical and Electronics Engineering

01UEE501 - POWER ELECTRONICS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define holding current of a SCR.
2. What is secondary breakdown?
3. Write down the equation of single-phase full converter with RL load.
4. State the significance of ripple factor.
5. Comment on forced commutation.
6. What are the two types of control strategies in dc-dc chopper?
6. What is constant frequency control of chopper?
8. Write the applications of multilevel inverter.
9. What is a matrix converter?
10. Enumerate some of the industrial applications of cyclo-converter.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain with neat sketch, the construction and operation of SCR with its VI characteristics. (10)

(ii) Explain briefly about the snubber circuit. (6)

Or

(b) Draw and explain the switching characteristics of IGBT with neat diagrams. (16)

12. (a) Discuss the effect of source inductance on the performance of single phase full converter. (16)

Or

(b) Explain the operation of three phase semi converter with neat waveforms. (16)

13. (a) Describe with neat sketch, the principle of operation of step-up chopper. Derive an expression for the average output voltage in terms of input dc voltage and duty cycle. State the assumptions made. (16)

Or

(b) Describe the operation of voltage commutated chopper with relevant diagrams. (16)

14. (a) Enumerate the methods used to reduce the harmonic present in the output of the DC-AC converter. (16)

Or

(b) Explain different methods of Harmonic control in inverters. (16)

15. (a) Discuss the operation of single-phase step-up and step-down cycloconverter. (16)

Or

(b) Explain the operation of single phase AC voltage controller with RL load. Derive the expression for *rms* output voltage. (16)
