Reg. No. : ☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 35031

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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. Draw TRIAC characteristics.

2. Define holding current of a SCR.

3. Write down the equation of single-phase full converter with RL load.

4. What do you mean by dual converter?

5. What are the two types of control strategies in dc-dc chopper?

6. What is a DC chopper?

7. Draw the circuit of on-line UPS.

8. List the various advantage of using PWM control to inverters.

9. What is a matrix converter?

10. List out the controls employed in cycloconverter.

PART - B (5 x 16 = 80 Marks)

11. (a) Draw the two transistor model of SCR and derive the expression for anode current.

(16)

Or

(b) Explain the switching characteristics of IGBT with neat diagrams. (16)

12. (a) With neat sketches, explain the effect of source impedance in the operation of three phase full converter. Derive the expression for average output voltage. (16)

Or

(b) Explain the operation of three-phase full converter using RL load. (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) Discuss with neat diagram the operation of a three phase bridge inverter with 120 degree mode operation. (16)

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

Or

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

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