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**Question Paper Code: 35301**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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 'Turn off time' of SCR.
2. Draw TRIAC characteristics.
3. Write down the equation of single-phase full converter with RL load.
4. Why freewheeling diodes are preferred in rectifier circuits?
5. Comment on forced commutation.
5. What is a DC chopper?
6. What is constant frequency control of chopper?
8. List the various advantage of using PWM control to inverters.
9. Differentiate between ON-OFF control and phase control.
10. What are the disadvantages of unidirectional or half-wave ac voltage controller?

PART - B (5 x 16 = 80 Marks)

11. (a) Describe the current commutation technique to turn off the SCR with neat sketch and waveform.

(16)

Or

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

12. (a) Describe the two modes of operation of single-phase full converter with inductive load. (16)

Or

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

13. (a) Explain the working of cuk converter with sketch and waveforms and also drive the expression for  $I_s$ . (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) With neat sketches describe the working of three-phase inverter using 180 degree mode. (16)

15. (a) Explain operating principle of single phase to single phase cyclo-converter with continuous and discontinuous load current with circuit and wave form. (16)

Or

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