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Reg. No. :

Name :

Sixth Semester B.Tech. Degree Examination, December 2009

(2003 Scheme)

Branch : APPLIED ELECTRONICS

03-603 : Power Electronics Systems (A)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. What are the differences between a thyristor and a TRIAC ?
2. What are the problems of series-connected and parallel-connected diodes ?
3. What is the two-transistor model of thyristor ?
4. Explain input, output and transfer characteristics of MOSFET.
5. What is the principle of phase control ?
6. What is a dual converter ?
7. What is the principle of operation of cycloconverters ?
8. What is the principle of operation of a step down chopper ?
9. What are the advantageous and disadvantageous of SMPS ?
10. Explain about v/f control for induction motors.

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PART – B

MODULE – I

Answer **two** questions from **each** Module. **Each** question carries **10** marks.

11. Explain in detail about the series and parallel connections of diodes.
12. A three phase bridge rectifier has a purely resistive load of R. Determine a) the efficiency, b) the form factor, c) the ripple factor and d) the transformer utilization factor. The rectifier delivers $I_{dc} = 60$ A at an output voltage of $V_{dc} = 280.7$ V and the source frequency is 60 Hz.
13. Write a note on : a) SIT b) IGBT

MODULE – II

14. What is a semi converter ? Draw two semi converter circuits and explain.
15. A single phase full converter has an RL load having $L = 4.5$ mH, $R = 1.5\Omega$. The input voltage is $V_s = 120$ V at (rms) 60 Hz. Determine a) the load current at a firing angle of $\alpha = 30^\circ$, b) the average thyristor current, c) the rms output current and d) the average output current.
16. With circuit diagram and waveforms explain the principle of operation of three phase unidirectional controller.

MODULE – III

17. With help of circuit diagram and waveforms explain the working of Buck-Boost regulators.
18. With the help of block diagram explain the operation of UPS.
19. What is the purpose of converter in dc drives ? Explain the principle of single phase full converter-fed dc motor drives.
