

C 61442

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Name.....

Reg. No.....



**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, APRIL 2014**

(2009 Scheme)

EC/PTEC 09 L01 – POWER ELECTRONICS

(Regular/Supplementary/Improvement)

Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.

Each question carries 2 marks.

1. Define Holding current and Latching current of a SCR.
2. List the functions of a free wheeling diode in a single-phase rectifier with RL load.
3. List out the advantages and drawbacks of PWM inverters.
4. What is a load commutated cycloconverter?
5. Name the UPS configurations.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

Each question carries 5 marks.

6. Explain synchronized UJT triggering with a neat circuit diagram.
7. Explain the VI characteristics of IGBT.
8. Explain the principle of operation of an inverter.
9. Discuss the working principle of a step up/step down chopper.
10. What are buck boost regulators?
11. What do you mean by redundancy in an UPS system?

(4 × 5 = 20 marks)

Turn over

Part C

Answer all questions.

Each question carries 10 marks.

MODULE I

12. Draw and explain structure of a thyristor. Also explain its static and dynamic characteristics.

Or

13. Explain the structure and working of a MOSFET. Also draw the VI characteristics of a MOSFET.

(10 marks)

MODULE II

14. Derive the expressions for average load voltage, r.m.s. load voltage and average load current for a single-phase half controlled converter with resistive load and inductive load.

Or

15. Explain the operation of single-phase bridge inverter with suitable voltage waveforms.

(10 marks)

MODULE III

16. Describe the working principle of a single-phase to single-phase bridge type cycloconverter for both continuous and discontinuous conductions.

Or

17. Explain working of a single-phase a.c. voltage controller with resistive load.

(10 marks)

MODULE IV

18. Explain the basic principle of operation of a switched mode power supply with a neat block diagram.

(10 marks)

Or

19. Explain the following terms related to UPS system :

- (a) Capacity of Battery.
- (b) Efficiency of Battery.

(5 + 5 = 10 marks)

[4 × 10 = 40 marks]