C 58329 (Pages 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2009

EE 2K 602/PT EE 2K 502—POWER ELECTRONICS

Time : Three Hours Maximum : 100 Marks

I. (a) Write a short note on the operation of UJT.

(b) What are the methods of turning on SCR ?

(c) Write a short note on pulse width modulation.

(d) What is the effect of free wheeling diode in the converter circuits ?

(e) What is meant by sequence control of ac regulators ?

(f) Give a brief account on tap changing for voltage regulation.

(g) Compare between a switched mode power supply with linear power supply.

(h) List the applications of uninterruptible power supply.

(8 × 5 = 40 marks)

Unit I

II. (a) Explain the various commutation circuits used in SCR circuits. (15 marks)

Or

(b) (i) Explain the basic structure and V-I characteristics of power transistors. (6 marks)

(ii) What is meant by static and dynamic characteristics as applied to SCRs ? Explain them. (9 marks)

Unit II

III. (a) Explain the operation of a SCR bridge inverter with suitable circuit and waveforms. (15 marks)

Or

(b) What is meant by phase controlled rectifiers ? Explain it in the discontinuous mode of operation with suitable waveforms. (15 marks)

Turn over

Unit III

IV. (a) What are the different methods of speed control of dc motors ? Explain it with relevant circuit diagrams and expressions.

(15 marks)

Or

(b) (i) Explain the time ratio control and current limit control strategies used for chopper.

(ii) With the help of basic power circuit diagram, explain the working of a current commutated chopper.

(7 + 8 = 15 marks)

Unit IV

V. (a) Explain the operation of buck-boost regulators with a neat circuit diagram and relevant waveforms.

(15 marks)

Or

(b) Write short notes on the following :—

(i) Cuk regulators.

(ii) buck regulators.

(15 marks)

[4 × 15 = 60 marks]