C 47607 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
JUNE 2008

EC 04 605—POWER ELECTRONICS

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) Differentiate MOSFET from IGBT.

(b) Explain the static and dynamic characteristics of thyristor.

(c) Draw a neat diagram of single-phase rectifier with 'RL' loads and explain.

(d) Draw a neat circuit diagram of bridge inverter and explain its principle in detail.

(e) Explain in detail the principle of operation of step-up chopper with a neat sketch.

(f) What are the methods to control the speed of D.C. motors ? Explain any one method in detail with a neat sketch.

(g) Differentiate switching Regulator from ordinary Voltage Regulator.

(h) Draw a neat block diagram of an UPS and explain.

(8 × 5 = 40 marks)

II. (a) (i) Explain the basic structure and V-I characteristics of power diodes with neat diagrams. (7 marks)

(ii) Give an account on gate triggering circuit using UJT. (8 marks)

Or

(b) (i) Explain the construction and V-I characteristics of TRIAC with neat sketches. (7 marks)

(ii) Differentiate power transistor from power diodes. (8 marks)

III. (a) (i) Draw a single-phase rectifier using SCR with RL loads and explain its principle in detail. (7 marks)

(ii) Differentiate Converter from Inverter. (8 marks)

Or

(b) (i) Draw a neat circuit diagram of pulse width modulated inverter and explain its operation in detail. (7 marks)

(ii) Explain in brief "the principle of SCR Inverters". (8 marks)

Turn over

IV. (a) (i) Explain the requirement for an Ideal a.c. regulator. (7 marks)

(ii) Draw a neat circuit diagram of a simple cyclo converter. Explain its principle of operation. (8 marks)

Or

(b) Write short notes on :

(i) Speed control of D.C motors. (7 marks)

(ii) Step-down choppers. (8 marks)

V. (a) Draw a neat block diagram of SMPS. Explain its principle of operation. Enumerate its features and applications.

Or

(b) (i) Compare the parameters of linear mode power supply from switched mode power supply. (7 marks)

(ii) Explain the design steps with equation of an UPS. (8 marks)

[4 × 15 = 60 marks]