Total No. of printed pages = 3

Et-503/PE/5th Sem/M/2013

POWER ELECTRONICS

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) What do you understand by the term "Thyristor" ? Discuss the working of an SCR with the help of its two transistor analogy.

   (b) Draw and explain the V-I characteristics of an SCR. 2+7+5=14

2. (a) What is a diac ? Differentiate between a diac and an SCR.

   (b) Explain how a zener diode may help in the protection of power semiconductor devices. 2+5+7=14

[Turn over

3. (a) Discuss the reasons for selection of fuses or circuit breakers for protection of power electronic devices.

(b) Compare and contrast fuses with circuit breakers.

(c) Draw and explain the characteristics of current limiting fuses. 4+3+7=14

4. (a) Discuss in brief the merits and demerits of using transistors and SCRs in an inverter circuit.

(b) With the help of a neat diagram, explain the working of a voltage driven inverter with special reference to resistive loads. 4+10=14

5. (a) Discuss the basic working principle of an UPS.

(b) What do you understand by ON line and OFF line UPS system ? Explain the working of the ON line UPS system. 4+3+7=14

6. State different methods for controlling the speed of a D.C. motor. Explain each one among them in brief. 14

7. (a) Discuss the general principle of operation of an induction motor. Also state its advantages and disadvantages.

(b) Write briefly regarding the methods by which speed of an induction motor may be controlled. 8+6=14

8. Write short notes on any *two* : 7×2=14

(i) BJT

(ii) Half wave controlled rectifier

(iii) SMPS

(iv) Stepper motor.