Total No. of printed pages = 2

Et-503/PE/5th Sem/ETC/2017/M

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 is a SCR ? Explain the construction and working of SCR with a neat circuit diagram. 2+5=7

   (b) Explain the two transistor analogy of a thyristor with a proper diagram. Also derive the equation for anode current. 4+3=7

2. What is controlled in a controlled rectifier ? Explain the working of a 1ϕ half-wave controlled rectifier with a purely resistive load. Also draw the waveform of input voltage, firing pulses, output voltage and load current. 2+8+4=14

Turn over

3. What is an inverter ? Discuss the working of voltage driven and current driven inverter with a neat circuit diagram. Also state its applications. 2+10+2=14

4. What is an UPS ? How are they classified ? State some of its uses. Explain the working of online and offline UPS with a proper diagram. 1+2+2+9=14

5. What is an SMPS ? What are the configurations of SMPS ? Explain any two of them. 2+2+5+5=14

6. State and explain the different methods of speed control of a D.C motor. 14

7. (a) Write the comparison of linear and switching power supply. 4

   (b) Explain buck and boost regulator with a proper circuit diagram. 10

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

   (a) GTO

   (b) IGBT

   (c) Power MOSFET

   (d) Snubber circuit.