

Total No. of printed pages = 2

Et-503/PE/5th Sem/2016/N

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 thyristor ? Name any six members of a thyristor family. 5
- (b) Explain the two transistor analogies of a thyristor with a proper diagram. 5
- (c) Compare power MOSFET and IGBT. 4
2. (a) What is controlled in controlled rectifier ? How ? 3+1=4
- (b) Explain the working of a 1ϕ (single phase) full wave controlled rectifier using a centre tapped transformer feeding purely resistive load. Also draw the waveform of output voltage and output current. 10

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3. (a) What is an inverter ? What are the types of inverter ? What are the applications of inverter circuit ? $2+2+2=6$
- (b) Draw the circuit diagram of a voltage driven inverter and explain its operating principle. 8
4. (a) What is UPS ? Classify UPS. $2+2=4$
- (b) Explain the working of online and off-line UPS with a suitable diagram. 10
5. (a) What is SMPS ? Name the configuration of SMPS. $2+2=4$
- (b) Explain flyback and push-pull configuration of SMPS with a proper circuit diagram. 10
6. State different methods of speed control of DC motor and explain any one of them. 14
7. Write short notes on any *two* : $7 \times 2 = 14$
- (a) Switching regulator
- (b) GTO
- (c) Circuit breaker
- (d) Heat sink.