

1740**Code : 15EE51T**Register
Number

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V Semester Diploma Examination, Nov./Dec. 2017**POWER ELECTRONICS****Time : 3 Hours]****[Max. Marks : 100**

- Note :** (i) Answer any **six** questions from Part-A. Each question carries **5** marks.
(ii) Answer any **seven** questions from Part-B. Each full question carries **10** marks.

PART – A

1. List the types of power transistors and their applications. **5**
2. Explain the principle of phase control with waveforms for resistive load. **5**
3. List the differences between MOSFET and BJT. **5**
4. Explain the methods of turn-on of SCR. **5**
5. Define :
 - (a) Reliability
 - (b) MTBT
 - (c) Rating of SCR**5**
6. Draw the circuit diagram of single phase Dual converter and explain the principle of operation. **5**
7. List the sources and effect of Power line disturbances. **5**
8. Explain speed control of shunt wound DC motor by armature control method. **5**
9. Draw the circuit diagram and explain the operation of DC solid state relay using opto couples. **5**

PART – B

10. (a) Explain the static V-I characteristics of SCR. 5
(b) Draw the layer diagram of UJT and list the applications of UJT. 5
11. (a) What is commutation ? Explain line commutation with wave diagram. 5
(b) Draw Synchronized pulse trigger circuit and explain with wave forms. 5
12. (a) Draw the circuit of step-up chopper and explain its operation. 5
(b) List the advantages of Power electronic device. 5
13. (a) Draw the circuit of mid-point step-down cyclo-converter and explain its operation. 5
(b) List the advantages and disadvantages of cyclo-converter. 5
14. (a) Draw the block diagram of SMPS and explain its operation. 5
(b) Draw the ON-Line UPS and explain its operation. 5
15. (a) Describe how SCR can be protected against $\frac{dv}{dt}$ and $\frac{di}{dt}$ protection. 5
(b) Explain the operation of half-bridge inverter and its operation with waveform. 5
16. (a) Define GTO and list its applications. 5
(b) Explain the operation of fly back converter with a neat circuit diagram. 5
17. Explain speed control of IM by variable voltage frequency method. 10
18. Draw the block diagram and explain the operation of switched mode welder. 10
19. (a) Explain the operation of SCR charger circuit for 12V battery with neat diagram. 5
(b) Explain with circuit diagram soft starting of Induction motor. 5

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