



C09-EE-604

3765

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DEEE—SIXTH SEMESTER EXAMINATION

POWER ELECTRONICS

Time : 3 hours]

[Total Marks : 80

PART—A

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. What are the applications of power electronics?
2. Compare the differences between GTOSCR and SCR.
3. What are different types of commutation technique?
4. Give the classification of the converters.
5. What is the principle of chopper?
6. What are the advantages and disadvantages of pulse-width modulation inverter?

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7. State the factors that affect the speed of DC motor.
8. What are the advantages of thyristor AC voltage controllers?
9. Write any three devices that are used to suppress the spikes in supply voltages.
10. State any three advantages of SMPS.

PART—B

Instructions : (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Explain the operation of SCR using two-transistor analogy. 5
(b) Explain the TRIAC firing circuit using DIAC with neat diagram. 5
12. (a) Explain the constructional details of DIAC and draw its V-I characteristics. 5
(b) Explain the protection of power devices for overvoltages using thyristor. 5
13. Explain three-phase fully controlled converter under resistive load with neat circuit diagram and waveforms. 10
14. List out different types of chopper. Explain the operation of chopper in all four quadrants. 10

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- 15.** Explain the series inverter with the help of diagram and waveforms. State the advantages and disadvantages. 10
- 16.** (a) Explain the speed control of DC shunt motors using choppers. 5
(b) State the factors that affect the speed of AC motors. 5
- 17.** (a) State any five types of disturbances that occur in a power system. 5
(b) Explain off-line UPS with the help of block diagram. 5
- 18.** (a) Explain the working of emergency lamp circuit using SCR. 5
(b) Briefly explain natural commutation with the help of circuit diagram and waveform. 5
