



C09-EE-604

3765

BOARD DIPLOMA EXAMINATION, (C-09)

APRIL/MAY—2015

DEEE—SIXTH SEMESTER EXAMINATION

POWER ELECTRONICS

Time : 3 hours]

[*Total Marks* : 80

PART—A

3×10=30

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. Draw the symbols for the following :

1×3=3

(a) SCR

(b) SUS

(c) TRIAC

2. Define (a) holding current, (b) latching current and (c) turn-on time.

1×3=3

3. What is the necessity of free-wheeling diode in converters?

4. Define chopper. List the different types of choppers.

5. State the requirements of an inverter.

6. State different commutation schemes.

7. Write the factors affecting the speed of DC motor.

8. Write the merits of chopper control DC motor.

9. * Write any three comparisons between linear power supplies and SMPS.
10. Write about any three devices used to suppress the spikes in supply voltages.

PART—B

10×5=50

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 *V-I* characteristics of DIAC. 5
12. (a) Explain the working of SCR circuit triggered by UJT. 5
 (b) Explain the *V-I* characteristics of TRIAC. 5
13. Explain the operation of single phase half-wave controlled converter using *R-L* load.
14. Explain the working principle of chopper in four quadrants with circuit and waveforms.
15. Explain the operation of series inverter with a neat circuit diagram with wave forms.
16. (a) Briefly explain the working of power BJT. 5
 (b) Classify UPS. Draw and explain block diagram of on-line UPS. 5
17. (a) Explain the variable frequency control method using chopper. 5
 (b) Compare converter-controlled and chopper-controlled DC drives. 5
18. (a) Write about any three disturbances in the power system. 3
 (b) Explain charging of batteries using SCR with a neat circuit diagram. 7
