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C09–EE–604

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2018

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 volt-ampere characteristics of power BJT.

2. State the need of commutation of SCR.

3. State any three advantages of TRIAC.

4. State the applications of choppers.

5. State the need of free-wheeling diode.

6. Define cycloconverter and state its types.

7. State the factors affecting the speed of a d.c. motor.

8. State the factors affecting the speed control of a.c. motors.

9. State any three advantages of SMPS.

10. State the need of UPS.

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. Explain the forward bias and reverse bias characteristics of SCR.

12. Draw and explain the TRIAC firing circuit using DIAC.

13. Explain the following operations of chopper :

(a) Voltage frequency control

(b) Constant frequency control

14. Explain the working of single-phase half-wave fully controlled converter with resistive load.

15. Explain the working of PWM (Pulse Width Modulation) inverter in multiple-pulse modulation.

16. Explain the speed control of induction motor by using converter and inverter method (V/F control).

17. Explain the working of an OFF-line preferred-type UPS with a neat sketch.

18. *(a)* Compare SCR and TRIAC in five aspects.

(b) Draw and explain the working of emergency lamp circuit using SCR.

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