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C09–EE–604

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2016

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. Define turn-on and turn-off times of SCR.

2. Draw the ISI circuit symbols of the following thyristor devices :

(a) DIAC

(b) SUS

(c) LASCR

3. State any three applications of DIAC.

4. Classify the converters based on direction of current and *V-I* characteristics.

5. What is the need of free-wheeling diode in converters?

6. Classify the inverters based on type of commutation and the type of output voltage.

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

8. State the advantages of thyristor AC voltage controller.

9. List any three power quality characteristics while supplying the power.

10. State any six advantages of SMPS.

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 constructional details and working of SCR and explain its *V-I* characteristics with neat diagram. 10

12. Explain different modes of TRIAC triggering. 10

13. *(a)* Explain the necessity of commutation in power electronics. 5

(b) Explain the operation of light dimmer circuit with a neat diagram. 5

14. Explain the working of single-phase fully-controlled converter with resistive load. Draw its waveforms. 10

15. Explain the operation of chopper in all four quadrants with neat diagram. 10

16. What is cyclo-converter? Explain the principle of cyclo-converter with neat diagram. 10

17. Explain the speed control of induction motor using voltage-frequency control using converter and inverter. 10

18. What is an UPS? Explain the classification of UPS. Draw the block diagram of on-line UPS and explain. 2+4+4=10

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