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C16-EE-504**6636**

**BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER—2023
DEEE - FIFTH SEMESTER EXAMINATION**

POWER ELECTRONICS AND PLC*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 ISI symbols for the following thyristor devices :
 - (a) SUS
 - (b) IGBT
 - (c) LASCR
2. Compare SCR and GTOSCR in any three aspects.
3. Write the classification of converters.
4. Draw the circuit diagram of parallel inverter.
5. List any six applications of cyclo converter.
6. State the factors affecting the speed of a DC motors.
7. State any three devices used to suppress spikes in supply system.
8. State the need for automation.
9. Draw the block diagram of PLC and mark its parts.
10. Draw the ladder diagram for OR gate.

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PART—B

10×5=50

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

11. Explain the volt-ampere characteristics of TRIAC under forward and reverse bias with diagrams.

12. Explain the methods of class-C and class-E commutations with diagrams.

13. Explain the operation of chopper in all four quadrants with diagrams.

14. (a) Explain the working of single-phase fully controlled converter with R load.

(b) Explain the working of single-phase bridge inverter.

15. Explain the speed control of DC shunt motor using chopper with diagrams.

16. Explain the working of open-loop control system with one example.

17. (a) Explain the working of closed loop systems for speed controller.

(b) Explain contact and coils in the following states :

(i) Normally open

(ii) Energized output

(iii) Branching

18. Draw and explain the ladder diagrams of the following :

(a) Star-Delta starter

(b) Traffic light control

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