



C16-EE-504

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BOARD DIPLOMA EXAMINATION, (C-16)

JANUARY/FEBRUARY—2022

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. State the necessity of Commutation of SCR.
2. What is DIAC? Draw its symbol.
3. Write the applications of Choppers.
4. Define cycloconverter and state any two applications of cycloconverter.
5. Draw the circuit diagram of 3-phase Bridge Inverter.
6. State the factors which affect the speed of DC motor.
7. State different types of disturbances which occur in power supply system.
- * 8. Define Transfer Function of a system.
9. State any three advantages of PLC.
10. Draw the ladder diagrams for logic OR, AND and NOT gates.

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PART—B

- 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. (a) Explain V-I characteristics of TRIAC. 5
(b) List out any five ratings of SCR. 5
12. Explain SCR circuit triggered by UJT with neat diagram and necessary waveforms. 10
13. Explain the working of single phase full wave AC regulator with resistance load using neat circuit diagram and waveforms. 10
14. (a) Explain the control methods of output voltage in choppers. 5
(b) Explain the working of single phase bridge inverter with a neat circuit diagram. 5
15. Explain the battery charging circuit using SCR with a neat diagram. 10
16. Explain the closed loop system of speed control used for a DC motor with a neat diagram. 10
17. (a) List out any five advantages of closed loop control system. 5
(b) Explain Timer on delay (Ton) instruction of timers used in ladder diagrams. 5
18. Draw and explain ladder diagram of the following :
(a) Star delta starter 5
(b) Staircase lighting 5

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