



C16-EE-504

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BOARD DIPLOMA EXAMINATION, (C-16)
OCTOBER/NOVEMBER—2024
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 circuit symbols for the following :
 - (a) SCR
 - (b) SBC
 - (c) TRIAC
2. List any three applications of DIAC.
3. State the need of freewheeling diode in converters.
4. What is an inverter? Classify the different types of inverters.
5. Draw three-phase inverter circuit.
6. List any three applications of power electronic circuits.
7. List any three types of disturbances in commercial power supply system.
8. Define transfer function.
9. List any three applications of PLC.
10. Draw the ladder diagram of logic OR and AND gates.

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 working of GTO-SCR with a neat sketch. 10
- 12.** Draw and explain the volt-ampere characteristics of TRIC under forward and reverse bias. 10
- 13.** Explain the operation of chopper in all four quadrants. 10
- 14.** (a) Draw and explain the working of a single-phase AC regulator. 5
(b) Define cycloconverter. List three applications of cycloconverter. 5
- 15.** Explain battery charger circuit using SCR with a neat diagram. 10
- 16.** Explain the working of closed loop control system with an example. 10
- 17.** (a) Compare open loop and closed loop control systems in five aspects. 5
(b) Explain count up instruction (CTU) of counters used in ladder diagrams. 5
- 18.** Explain the ladder diagram for the following :
(a) DOL starter 5
(b) Star-Delta starter 5

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