



C16-EE-504

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**BOARD DIPLOMA EXAMINATION, (C-16)
OCT/NOV—2018
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 symbols for the following :
 - (a) SBS
 - (b) IGBT
 - (C) PUT
2. State any three advantages of SCR.
3. State the need of freewheeling diode in converters.
4. Classify inverters based on the number of phases and the type of connection.
5. Define a cycloconverter and state any four applications.
6. List any three applications of power electronic circuits.
7. List any three causes of disturbances in commercial power supply system

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8. Define the following terms :
 (a) System
 (b) Control system
9. State any three advantages of PLC.
10. Draw the ladder diagram for logic NOR gate.

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 working of TRMC and explain its V-I characteristics.
12. Explain the construction, working and V-I characteristics of SCR.
13. Explain the working of single-phase half-wave fully controlled converter under R-L load with neat wave form.
14. (a) Explain the working principle of chopper. 5
 (b) Explain the working of single-phase bridge inverter. 5
15. (a) Explain the speed control of induction motor by using voltage-frequency (V/F) control. 5
 (b) Explain the speed control of DC shunt motor using converter with neat waveforms. 5
16. (a) Explain an open-loop control system with one example. 5
 (b) List any five applications of closed-loop control system. 5
17. (a) State the requirements of automation. 5
 (b) Draw the ladder diagram for AND, OR, NOT gates. 5
18. Draw the block diagram of a PLC and explain in brief. 10
