C16-EE–504

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BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—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. Draw the symbols of the following :

(a) TRIAC

(b) SUS

(c) LASCR

2. Compose GTOSCR and SCR in any three aspects.

3. Classify the different types of converters.

4. What is an inverter? Classify the different types of inverters.

5. Write any six applications of chopper.

6. State the different types of disturbances in commercial power supply.

7. List the factors affecting the speed of AC motors.

8. State any six requirements of automation.

9. State any three applications of PLC.

10. Draw the ladder diagram of AND gate.

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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. Explain the working and *V-I* characteristics of SCR with a neat sketch. 10

12. Draw and explain the volt-ampere characteristics of TRIAC under forward and reverse bias. 10

13. Explain the working of chopper in all four quadrants. 10

14. *(a)* Draw and explain the working of a single-phase AC regulator. 5

(b) Define cycioconverter. Write any six applications of chopper. 5

15. *(a)* Explain the speed control method of DC motor using chopper. 5

(b) Draw the light dimmer circuit using TRIAC and DIAC and write its operation in brief. 5

16. Explain open loop control system with one example. 10

17. *(a)* Give the comparison between open loop and closed loop control system in five aspects. 5

(b) Draw the block diagram of PLC and label the parts. 5

18. Draw the ladder diagram for star-delta starter and write its operation in brief. 10

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