



TED (15) 5042
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A22 – 07897

Reg. No.....
Signature

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2022**

INDUSTRIAL ELECTRONICS AND PLC

[Maximum Marks: **100**]

[Time: **3 Hours**]

PART-A

(Maximum Marks: **10**)

I. (Answer *all* questions in one or two sentences. Each question carries **2** marks)

1. Define latching current of SCR.
2. State the principle of cycloconverter.
3. List the types of UPS.
4. List any four types of instructions in PLC.
5. Name the industrial heating methods.

(5 x 2 = 10)

PART-B

(Maximum Marks: **30**)

II. (Answer *any five* of the following questions. Each question carries **6** marks)

1. Explain two transistor analogy of SCR.
2. Explain the VI characteristics of DIAC.
3. Explain the working of series inverter.
4. Explain single phase bridge converter with R load. Draw waveforms.
5. Compare AC and DC drives.
6. List the applications of induction heating.
7. List applications of PLC.

(5 x 6 = 30)

PART-C

(Maximum Marks: **60**)

(Answer *one* full question from each Unit. Each full question carries **15** marks)

UNIT – I

- III.** (a) Explain RC triggering of SCR. (8)
- (b) What are the different commutation techniques used in SCR. Explain natural commutation. (7)

OR



- IV. (a) Draw and explain the structure of IGBT. (8)
(b) Explain the VI characteristics of SCR. (7)

UNIT – II

- V. (a) Explain the working of single phase full wave midpoint cycloconverter with neat sketch. (8)
(b) Explain the working of step up chopper with neat diagram. (7)

OR

- VI. (a) Explain single phase ac voltage controller using R load. (8)
(b) Explain the working of parallel inverter circuit. (7)

UNIT- III

- VII. (a) Explain stator voltage control method of speed control of induction motor. (8)
(b) Explain principle of dielectric heating and list any four of its applications. (7)

OR

- VIII. (a) Explain working of on line UPS with circuit diagram. (8)
(b) Explain any two types of resistance welding. (7)

UNIT - IV

- IX. (a) Explain the architecture of PLC. (8)
(b) Draw ladder diagram for staircase wiring. (7)

OR

- X. (a) Explain the instruction set of PLC. (8)
(b) Draw ladder diagram for AND gate, OR gate, EXOR gate, NOR gate. (7)
