N19-00566

TED (15) – 5042

(REVISION — 2015)

Reg. No. ....

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

INDUSTRIAL ELECTRONICS AND PLC

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1.   Define the term holding current of an SCR.

2.   Define the term commutation in thyristors.

3.   List any two applications of cyclo converter.

4.   List any two applications of induction heating.

5.   Write any two MATH instructions in PLC.   (5×2 = 10)
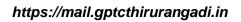
PART — B

(Maximum marks : 30)

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

1.   Describe two transistor analogy of SCR.

2.   Draw and explain the Resistive gate triggering method of SCR.

3.   Draw and explain the circuit of single phase half wave converter with RL load.

4.   Draw and explain full wave ac voltage controller using SCR.

5.   List important applications of dielectric heating.

6.   List advantages of induction heating.

7.   Implement ladder diagram for the following logical expression.
     (a) Y=(A+B)C   (b) Y=AB+CD   (c) Y=(A+B)(C+D)   (5×6 = 30)

[155]   [P.T.O.

Marks

PART — C
(Maximum marks : 60)
(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) With basic structure describe the working of an IGBT.   8

(b) Draw and explain the gate triggering circuit of thyristor using UJT.   7

OR

IV (a) Draw and explain the circuit of class C commutation (complimentary).   8

(b) Describe the working of SCR with schematic diagram.   7

UNIT — II

V (a) Draw the circuit of full wave midpoint converter with R load and explain.   8

(b) With diagram explain the working of basic series inverter.   7

OR

VI (a) Explain the working of a step - up cyclo converter with circuit.   8

(b) Explain the working of basic DC chopper with diagram.   7

UNIT — III

VII (a) Describe the principle of Induction heating.   8

(b) Describe the working of the ON-line UPS.   7

OR

VIII (a) Describe Spot welding and Butt welding.   8

(b) Explain the speed control of Induction motor using variable voltage variable frequency method.   7

UNIT — IV

IX (a) Describe Timer and Counter instruction set used in ladder diagram.   8

(b) Implement basic gates using ladder diagram and illustrate with its truth table.   7

OR

X (a) Describe the architecture of PLC.   8

(b) List the applications of PLC (Any seven points).   7