TED (10) – 4047

(REVISION — 2010)

Reg. No. ....

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

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.   List two applications of IGBT.

2.   Define the term latching current of an SCR.

3.   State the function of a chopper.

4.   Define the term stabilizer.

5.   State the principle of hall effect sensors.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1.   Draw the structure of a DIAC and explain.

2.   Explain full wave mid-point converter with R load.

3.   Briefly explain the circuit of an AC chopper.

4.   With block diagram explain the operation of on-line UPS.

5.   Describe the circuit of speed control of a series motor.

6.   Describe Toff instruction in PLC.

7.   Draw the ladder diagram of a half adder circuit.

(5×6 = 30)

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[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) Explain turn on methods of an SCR.   7

    (b) Draw the structure of an IGBT and explain.   8

OR

IV (a) With circuit diagram explain an RC trigger circuit of an SCR.   6

    (b) Explain the structure and characteristics of an SCR.   9

UNIT — II

V (a) With circuit diagram explain the principle of a parallel inverter.   8

    (b) Describe the working of a single phase dual converter.   7

OR

VI (a) Explain the working of a half wave controlled rectifier with RL load.   8

    (b) Explain the working of a step down chopper.   7

UNIT — III

VII (a) With block diagram explain a sequence timer used in resistance welding.   8

    (b) Describe the applications of induction heating.   7

OR

VIII (a) Explain the speed control of induction motor using rotor on-off method.   8

    (b) Explain the principle of dielectric heating.   7

UNIT — IV

IX (a) Draw the ladder diagram of an X-OR gate.   6

    (b) Briefly explain the architecture of a PLC.   9

OR

X (a) Write short notes on :

    (i) Proximity switch   (ii) RS 485 protocol   8

    (b) Describe any two math instructions used in PLC.   7