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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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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

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