Reg. No. ....

Signature ....

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

INDUSTRIAL ELECTRONICS & 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 any four forced commutation methods used in SCR.

   2. List any two differences between AC and DC drives

   3. List the operating modes of Dual convertor.

   4. Draw the symbols of SCR, TRIAC, DIAC and UJT.

   5. List any four applications of PLC.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

   1. Illustrate the deference between SCR and TRIAC.

   2. Explain the two transistor analogy of SCR.

   3. Explain the principle of a step-up DC chopper with neat diagram.

   4. Explain the requirement and application of Inverters.

   5. Describe the principle of Resistance welding.

   6. Briefly explain the speed control of DC shunt motor.

   7. Implement NAND and NOR gates using ladder diagram. Illustrate the truth table also.

(5×6 = 30)

[120]

[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) Describe the working of RC triggering circuit with neat sketches.　　8

(b) Briefly explain the VI characteristics of a TRAIC with waveform.　　7

OR

IV (a) Draw and explain the structure of IGBT.　　9

(b) Draw the circuit diagram of complementary commutation and explain.　　6

UNIT — II

V (a) Draw the single phase full wave midpoint convertor and explain its working.　　8

(b) Explain the principle of operation of a Basic Inverter Circuit.　　7

OR

VI (a) Explain the working of a parallel inverter with circuit diagram and output waveform.　　8

(b) Briefly explain the working of a Jones chopper.　　7

UNIT — III

VII (a) Explain the speed control of an Induction motor using stator voltage control method.　　8

(b) Explain the principles of induction heating.　　7

OR

VIII (a) Explain the working of an Online UPS with block diagram.　　8

(b) Explain the applications of Dielectric heating.　　7

UNIT — IV

IX (a) Explain the architecture of PLC.　　8

(b) Describe any three logical instructions used in PLC.　　7

OR

X (a) Explain the Timer / Counter instructions in PLC programming.　　8

(b) Implement a ladder program for a staircase light control.　　7