

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017

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. Draw the symbol of TON instruction in PLC.
2. Draw VI characteristics of a TRIAC.
3. Differentiate low to high and high to low cycloconverters.
4. Differentiate on line and off line UPS.
5. Name two different methods of induction motor speed control. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain principle of proximity switch.
2. Explain the principle of a single phase dual convertor.
3. Explain stator voltage control of induction motor speed control.
4. Differentiate induction heating and dielectric heating.
5. Explain ladder diagram with examples.
6. Explain working principle of resistance welding.
7. Explain VI characteristics of Diac. (5×6 = 30)

## PART — C

(Maximum marks : 60)

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

## UNIT — I

- III (a) Explain VI characteristics of SCR with relevant diagrams. 10  
 (b) Differentiate natural and forced SCR commutation methods. 5

OR

- IV (a) Explain different SCR Turn - on methods. 10  
 (b) Draw the internal structure of a TRIAC. 5

## UNIT — II

- V Explain the working of an AC power control using SCR and TRIAC with relevant diagrams and waveforms. 15

OR

- VI Explain the working of centre tap and bridge converters with relevant diagrams. 15

## UNIT — III

- VII (a) Explain the working of online UPS with relevant block diagrams. 8  
 (b) Explain the types of resistance welding schemes. 7

OR

- VIII (a) Explain the principle of induction heating. 8  
 (b) Compare AC and DC drives. 7

## UNIT — IV

- IX (a) Explain the architecture of PLC with relevant diagrams. 8  
 (b) Describe sensors and actuators. 7

OR

- X (a) Write a ladder program for XNOR and AND gates. 7  
 (b) Explain Rs. 485 field bus protocol. 8