

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

**ELECTRONICS INSTRUMENTS & MEASUREMENTS**

[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 'accuracy' for an electronic instrument.
2. What is the difference between active and passive transducer ?
3. What is a logic analyser ?
4. List any two types of DAS.
5. What is a dual trace CRO ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. With the support of neat diagram, explain how one can convert a basic Galvanometer into a multi range ammeter.
2. List the applications of CRO.
3. Explain the method of finding the value of an unknown inductance using 'ac bridge method'.
4. With a neat diagram, explain the operation of X-Y recorders.
5. Explain the theory of a hall effect sensor with necessary diagram.
6. Differentiate 3½ and 4½ digit displays in terms of accuracy.
7. What is telemetry ? Describe the role of telemetry in instrumentation system. (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) How does a digital multimeter measure fundamental electrical quantities ? Explain with the help of a block diagram. 9
- (b) Compare moving coil and moving iron instruments. 6

OR

- IV (a) Explain the operation of digital frequency meter with a neat diagram. Also explain a method for extending its range. 9
- (b) Explain how resistances are measured by an analog multimeter. 6

## UNIT — II

- V (a) Explain the working of a DSO with the help of a neat block diagram. 9
- (b) What is thermocouple ? Explain its principle. 6

OR

- VI (a) Draw the internal structure of a Cathode Ray Tube and explain its Constructional details. 9
- (b) How is a thermistor used for accurate measurement of temperature ? 6

## UNIT — III

- VII (a) Draw the block diagram of logic analyser. Explain why logic state analyser is better suited for designing digital system than oscilloscopes. 9
- (b) List the applications of Spectrum analyser. 6

OR

- VIII (a) Derive the mathematical expression for finding an unknown inductance, using Hay's bridge. 9
- (b) Describe the principle of measuring frequency using Wien bridge. 6

## UNIT — IV

- IX (a) How does a strip chart recorder record the measured variable ? Explain with the support of a neat diagram. 9
- (b) How does a closed loop control system differ from an open loop control system ? 6

OR

- X (a) Draw the block diagram and explain the operation of a Digital Data Acquisition System. 10
- (b) Draw the block diagram of potentiometric type recorder. 5