

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

**ELECTRICAL MEASUREMENTS AND INSTRUMENTATION**

[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. What is the necessity of shunts and multipliers ?
2. Differentiate between insulation megger and earth tester with respect to dial marking.
3. List any two errors in dynamometer type wattmeter.
4. Write any two application of a multimeter.
5. Write any one application of transducer. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Classify and explain the secondary instruments based on their function.
2. Explain briefly the different mechanism of production of essential torques in an indicating instrument.
3. Draw the diagram of a three phase two element type energy meter.
4. Explain briefly Wheat stone's bridge used for measurement of medium resistance.
5. Describe the construction and working of reed type frequency meter.
6. Draw and explain LVDT.
7. List the applications of CRO. (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 constructional details and working of a Permanent magnet moving coil instrument with a neat sketch. 8
- (b) Explain the spring control method of obtaining controlling torque in indicating instrument with help of neat diagram. 7

OR

- IV (a) Explain the constructional details and working of attraction type moving iron instruments with the help of neat diagram. 8
- (b) Explain the general sources of errors in measuring instruments and suggest remedies to reduce them. 7

## UNIT — II

- V (a) Explain the construction and working of single phase induction type energy meter with diagram. 8
- (b) Draw the connection diagram and explain CTs and PTs in association with wattmeter for measuring power in High Tension line. 7

OR

- VI (a) Explain construction and working of dynamometer type wattmeter. 8
- (b) Draw the circuit diagram and explain the procedure for calibration of energy meter by direct loading. 7

## UNIT — III

- VII (a) Explain with neat sketch the procedure for the measurement of earth resistance by earth tester. 8
- (b) Draw the circuit diagram and explain the Murray loop test for finding short circuit fault in an underground cable. 7

OR

- VIII (a) Explain briefly dynamometer type single-phase power factor meter with help of diagram. 8
- (b) Explain the principle of AC bridge. 7

## UNIT — IV

- IX (a) Draw the constructional details of C.R.T. 8
- (b) Draw and explain Bourdon tube. 7

OR

- X (a) Draw the block diagram of a C.R.O. 8
- (b) Describe the working of piezoelectric transducers. 7