

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

ELECTRICAL MEASURING INSTRUMENTS

[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 out necessary torques of an indicating instrument.
2. State the functions of controlling torque.
3. Enumerate the reasons for creeping error in induction type energy meters.
4. Differentiate low, medium and high resistances.
5. Enumerate the functions of synchroscope.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Distinguish between moving coil instruments and moving iron instruments.
2. Classify measuring instruments.
3. Draw the connection diagram of three phase two element energy meter.
4. Explain the terms calibration and Phantom loading.
5. Draw and mark the main parts of megger.
6. Describe the Varley Loop method to find earth fault of cable.
7. Draw the block diagram 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) With neat sketch explain working principle of MI attraction type instrument. 8  
 (b) A MC instrument has a resistance of 10 ohm and gives FSD when carrying a current of 50 mA. Show the arrangements how it can be adopted to measure voltages up to 750 volt and current up to 1000A. 7

OR

- IV (a) With neat sketch explain working principle of rectifier type volt meter and ammeter. 8  
 (b) With neat sketch explain working principle of PMMC instrument. 7

UNIT — II

- V Draw and explain in detail the working principle of induction type energy meter. 15

OR

- VI (a) Setup an arrangement for measurement of percentage error in an energy meter with minimum power consumption at upf. 8  
 (b) Explain in detail the error due to different connections in a dynamometer type watt meter. 7

UNIT — III

- VII (a) Explain with neat sketch the measurement of medium resistance by using Wheatstone bridge. 8  
 (b) Describe with necessary sketches to measure inductance using bridge. 7

OR

- VIII (a) Explain the working principle of Maxwell Bridge. 8  
 (b) Draw and mark the main parts of earth megger. 7

UNIT — IV

- IX (a) Explain with neat sketch vibrating reed type frequency meter. 8  
 (b) Explain the method to measure voltage, frequency and time period by using CRO. 7

OR

- X (a) Explain with neat sketch single phase power factor meter. 8  
 (b) Explain the working principle of electro dynamo meter (Weston) synchroscope. 7