

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2020**

**ELECTRICAL MEASURING INSTRUMENTS**

[Maximum Marks: 75]

[Time: 2.15 Hours]

**PART-A**

(Answer *any three* questions in one or two sentences. Each question carries 2 marks)

- I. 1. Name the material used for making control springs.  
2. Define multiplication factor.  
3. List out any two parts of an earth tester.  
4. State the time base of a CRO.  
5. Write down the necessity of focus control in CRO. (3 x 2 = 6)

**PART-B**

(Answer any *four* of the following questions. Each question carries 6 marks)

- II 1. Explain the working of a rectifier type ammeter.  
2. Differentiate between MC and MI type instruments.  
3. Illustrate the calibration of energy meter by direct loading at 0.866 pf lead.  
4. List out any six types errors in dynamo meter type watt meter.  
5. Describe resistance measurement by voltmeter ammeter method.  
6. Explain the advantages of digital meters over analog meters.  
7. List out any six applications of CRO. (4 x 6 = 24)

**PART-C**

(Answer *any of the three units* from the following. Each full question carries 15 marks)

**UNIT – I**

- III (a) Describe the working of an attraction type moving iron instrument. (8)  
(b) Illustrate the range extension of a voltmeter with the help of a neat sketch. (7)

**OR**

- IV (a) A 1 mA meter d'Arsonval movement with an internal resistance of 200  $\Omega$  is to be converted in to a 0-500mA ammeter, calculate the shunt resistance required, voltage drop across the shunt and equivalent resistance of shunt and meter in parallel. (8)  
(b) Define controlling system. Explain the necessity of controlling torque. (7)

## UNIT – II

- V (a) Explain the calibration wattmeter by phantom loading. (8)  
(b) Draw the schematic diagram of a 3 phase 2 element type energy meter. (7)

**OR**

- VI (a) Illustrate the construction of a single phase induction type energy meter. (8)  
(b) Draw the connection diagram of 3 phase power by two wattmeter method. (7)

## UNIT- III

- VII (a) Illustrate Schering bridge with the help of a neat sketch. (8)  
(b) Draw and explain Wheatstone bridge for unknown resistance measurements. (7)

**OR**

- VIII (a) Explain measurement of inductance using Maxwell's inductance bridge. (8)  
(b) Describe murray loop method for locating ground fault. (7)

## UNIT - IV

- IX (a) Draw and identify each block of a digital voltmeter. (8)  
(b) Describe the working of an electrical resonance type frequency meter. (7)

**OR**

- X (a) Explain the working of a single phase power factor meter. (8)  
(b) Draw the connection diagram of a Weston type synchroscope and identify its parts. (7)

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