

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER - 2024**

**ELECTRICAL AND ELECTRONIC INSTRUMENTS**

[Maximum Marks: **100**]

[Time: **3 Hours**]

**PART-A**

[Maximum Marks: **10**]

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

1. List the four constituents of an Induction type energy meter.
2. List any two AC bridges.
3. Define the deflection sensitivity of a CRO.
4. Give the expansions of CRO and DSO.
5. Name any two types of analog recorders. (5 x 2 = 10)

**PART-B**

[Maximum Marks: **30**]

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

1. Give the method of converting a galvanometer into a voltmeter.
2. List the specification of an analog multimeter (Any six points).
3. Describe the circuit diagram of Wien Bridge Write the bridge balance condition.
4. Describe the impedance measurement, using Hay's bridge.
5. Sketch the block diagram of a sampling Oscilloscope.
6. Briefly explain the method of phase angle measurement, using Lissajous patterns. Draw patterns of phase difference 0,  $\pi/4$  and  $\pi/2$ .
7. Draw the diagram of a galvanometric recorder and explain its operation. (5 x 6 = 30)

**PART-C**

[Maximum Marks: **60**]

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

**UNIT – I**

- III. a. Draw the construction of a D'Arsonval Galvanometer & explain. (8)
- b. Explain the operation of an attraction type Moving- Iron Instrument, with a sketch. (7)

**OR**

- IV. a. Describe the method of conversion of a galvanometer as an Ammeter. (8)
- b. Draw and explain the block diagram of an analog multimeter. (7)

## **UNIT – II**

- V. a. Describe the Working principle of dynamometer type Wattmeter. (8)  
b. Draw the Wheatstone's bridge circuit and derive the expression for unknown resistance. (7)

### **OR**

- VI. a. Explain the measurement of electrical energy, using a single- phase energy meter. (8)  
b. Describe the capacitance measurement, using Schering Bridge. (7)

## **UNIT- III**

- VII. a. Draw the diagram of a CRT and show the important functional elements. (8)  
b. Describe the working of DSO with the help of a block diagram. (7)

### **OR**

- VIII. a. Describe the block diagram of a CRO. (8)  
b. Explain the working of a dual- trace oscilloscope, with a block diagram. (7)

## **UNIT - IV**

- IX. a. Draw and explain the block diagram of a digital multimeter. (8)  
b. Draw the figure of an X-Y recorder and explain its working. (7)

### **OR**

- X. a. Describe the working of a Ramp type digital voltmeter. (8)  
b. Explain the working of a strip- chart recorder, with a block diagram. (7)

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