

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2022**

**ELECTRICAL AND ELECTRONICS MEASURING INSTRUMENTS**

[Maximum Marks: 75]

[Time: 3 Hours]

**PART-A**

**I. Answer *all* the following questions in one word or one sentence. Each question carries ‘one’ mark.**

**(9 x 1 = 9 Marks)**

		Module Outcome	Cognitive level
1.	Name any two methods used to provide controlling torque in indicating type instruments.	M1.02	R
2.	Name the type of instruments which has uniform scale and can be used only for DC measurements.	M1.03	U
3.	Name any one bridge which can be used to measure unknown capacitance.	M2.03	R
4.	List out the two types of coil present in an electrodynamic meter type instrument.	M2.04	R
5.	Murray loop test is used to find out.....	M2.02	U
6.	List out any two uses of Cathode ray oscilloscope.	M3.04	R
7.	Write one example for an instrument which is used to measure insulation resistance.	M3.02	R
8.	Define the term transducer.	M4.01	R
9.	Write one application of thermistor.	M4.02	R

**PART-B**

**II. Answer any *eight* questions from the following. Each question carries ‘three’ marks.**

**(8 x 3 = 24 Marks)**

		Module Outcome	Cognitive level										
1.	Define indicating and recording type instruments with one example.	M1.01	R										
2.	Write down the resistance ranges of the following A) Low resistance B) Medium resistance C) High resistance	M2.01	R										
3.	Draw the connection diagram of an electrodynamic meter type watt meter.	M2.04	U										
4.	Match the following related to an energy meter. <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 2px;">System</td> <td style="padding: 2px;">Main component</td> </tr> <tr> <td style="padding: 2px;">Driving system</td> <td style="padding: 2px;">Aluminium disc</td> </tr> <tr> <td style="padding: 2px;">Breaking system</td> <td style="padding: 2px;">Electromagnets</td> </tr> <tr> <td style="padding: 2px;">Moving system</td> <td style="padding: 2px;">Permanent magnet</td> </tr> <tr> <td style="padding: 2px;">Registering system</td> <td style="padding: 2px;">Gear mechanism</td> </tr> </tbody> </table>	System	Main component	Driving system	Aluminium disc	Breaking system	Electromagnets	Moving system	Permanent magnet	Registering system	Gear mechanism	M2.04	U
System	Main component												
Driving system	Aluminium disc												
Breaking system	Electromagnets												
Moving system	Permanent magnet												
Registering system	Gear mechanism												

5.	Describe the voltmeter ammeter method to measure resistance.	M3.01	U
6.	Draw the block diagram representation of a digital frequency meter.	M3.03	R
7.	List out any six basic requirements of a transducer.	M4.01	R
8.	Define following specifications of a transducer. A) Operating range B) accuracy C) sensitivity	M4.01	R
9.	Distinguish between active and passive transducers.	M4.01	R
10.	Describe the operation of DC tacho generator.	M4.03	U

### PART-C

Answer all questions. Each question carries 'seven' marks

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	Find the value of shunt and multiplying power of an MC instrument which is extended to measure 20 A. if the meter has a full scale deflection at 1mA and internal resistance of 5 ohm. <b>OR</b>	M1.04	A
IV.	Develop circuit diagrams to extend the range of an MC instrument which has a full scale deflection at 20mA and 1V to A) 1A ammeter B) 30 V voltmeter.	M1.04	A
V.	Explain the construction and working principle of a moving iron instrument. <b>OR</b>	M1.03	U
VI.	Describe different types of damping mechanism used in indicating type instruments.	M1.02	U
VII.	Describe the method of medium resistance measurement using wheatstone bridge. <b>OR</b>	M2.01	U
VIII.	Describe the use of a Maxwell inductance bridge.	M2.03	U
IX.	Explain the working principle of digital voltmeter with the help of block diagram. <b>OR</b>	M3.03	U
X.	Explain the operation of a reed type frequency meter.	M3.01	U
XI.	Explain the mechanism of westone type synchroscope. <b>OR</b>	M3.01	U
XII.	Describe the block diagram representation of cathode ray oscilloscope.	M3.04	U
XIII.	Illustrate general block diagram of a data acquisition system. <b>OR</b>	M4.04	U
XIV.	Describe the method of measurement of displacement using LVDT.	M4.02	U

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