

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3160915****Date:26/11/2021****Subject Name:Electrical Measurement and Measuring Instruments****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
<b>Q.1</b>	(a) Describe the working principle of Hall effect transducer.	<b>03</b>
	(b) What is standard of measurement? Describe various standards of measurement.	<b>04</b>
	(c) Define transducer and classify transducers on different basis.	<b>07</b>
<b>Q.2</b>	(a) Why PMMC instrument cannot be used for ac measurement?	<b>03</b>
	(b) Explain how strain gauges are used for the torque measurement.	<b>04</b>
	(c) Define following term.	<b>07</b>
	(i)Accuracy (ii)Drift (iii)Sensitivity (iv)Reproducibility (v)Precision (vi)Threshold (vii)Fidelity.	
<b>OR</b>		
	(c) Explain principle and construction of RTD.	<b>07</b>
<b>Q.3</b>	(a) State different methods used to measure low, medium and high resistance.	<b>03</b>
	(b) Draw the circuit diagram of Anderson's bridge.	<b>04</b>
	(c) Explain the working of electrodynamic type wattmeter.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Why secondary of current transformer should not be open, when primary is energized?	<b>03</b>
	(b) Explain any one method for measurement of high resistance.	<b>04</b>
	(c) Describe the constructional detail of a moving iron instrument with the help of diagram. Derive the equation for deflection if spring control is used.	<b>07</b>
<b>Q.4</b>	(a) Write a short note on Systematic errors.	<b>03</b>
	(b) How the current range of PMMC instrument extended with the help of shunts?	<b>04</b>
	(c) Explain working of Kelvin's double bridge for measurement of low resistance with neat diagram.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Draw circuit diagram of Schering bridge.	<b>03</b>
	(b) Explain construction of single phase induction type energy meter.	<b>04</b>
	(c) Explain measurement of unknown inductance with the help of Hay's bridge. Also draw phasor diagram.	<b>07</b>
<b>Q.5</b>	(a) What do you mean by piezoresistive effect? State types of strain gauges.	<b>03</b>
	(b) State the advantages and applications of D.S.O.	<b>04</b>
	(c) Explain construction and working principle of Megger.	<b>07</b>

**OR**

- Q.5** (a) Explain Clamp on meter. **03**
- (b) Describe the different criteria for selection of transducers for a particular application. **04**
- (c) Explain the construction and working principle of LVDT with neat sketch. **07**  
Explain how the magnitude and direction of the displacement of core of LVDT can be detected.

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