

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018****Subject Code:2141003****Date:01/12/2018****Subject Name:Electronics Measurement and Instrumentation****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		<b>MARKS</b>
<b>Q.1</b>	<b>Fill in the blanks</b>	<b>14</b>
	1 The repeat accuracy of an instrument can be judged from its _____ of error.	
	2 A _____ device prevents the oscillation of the moving system and enables the latter to reach its final position quickly.	
	3 A _____ is a passive transducer and is employed for converting mechanical displacement into a change of resistance.	
	4 LVDT windings are wound on _____ material.	
	5 A permanent magnet moving coil instrument can be used as _____ by using a low resistance shunt.	
	6 A null type of bridge with DC excitation is commonly known as _____ bridge.	
	7 Storage oscilloscope operates on _____ principle.	
	8 To avoid the effect of _____ in AC bridges we can use magnetic screening.	
	9 To measure the flux, devices used are based on _____ effect.	
	10 A spectrum analyzer is used to measure _____ .	
	11 _____ shape signals are generated by Wien-bridge oscillators.	
	12 Most suitable material for a thermocouple is _____ .	
	13 Focusing and accelerating anodes are of _____ shape.	
	14 _____ technique is most widely used in the single channel data acquisition system.	
<b>Q.2</b>	(a) Define: (1) Sensitivity, (2) Reproducibility, (3) Repeatability.	<b>03</b>
	(b) Give the difference between Systematic error and Random error.	<b>04</b>
	(c) What are the difficulties associated with low resistance measurement? Explain working principle of Kelvin's double bridge.	<b>07</b>
<b>OR</b>		
	(c) Elaborate the Maxwell's induction-capacitance bridge and give its advantages and disadvantages.	<b>07</b>
<b>Q.3</b>	(a) What is deflection defocusing and its causes?	<b>03</b>
	(b) Why phosphor screen is provided with an aluminum layer in Cathode Ray Tube?	<b>04</b>
	(c) Explain Digital frequency meter.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Define: (1) gating error, (2) time base error, (3) trigger level error.	<b>03</b>
	(b) Explain constant current mode and constant voltage mode with respect to Vector impedance meter.	<b>04</b>
	(c) Draw and explain neat schematic diagram of Cathode Ray Tube.	<b>07</b>
<b>Q.4</b>	(a) Write advantages of Wien Bridge Oscillator.	<b>03</b>
	(b) Explain the two types of delay line in CRO.	<b>04</b>
	(c) Explain the sweep frequency generator.	<b>07</b>

**OR**

- Q.4** (a) Give applications of Wave analyzer. **03**  
(b) Compare standard signal generator with modern signal generator. **04**  
(c) Explain Resistance Temperature Detector and its lead compensation method. **07**
- Q.5** (a) What are the piezoresistive and piezoelectric effects? **03**  
(b) What is Lock-in amplifier? **04**  
(c) Elaborate Hall-effect transducer. **07**

**OR**

- Q.5** (a) Note the importance any three components of Digital Acquisition System. **03**  
(b) What are the advantages of opto-couplers? **04**  
(c) Explain principle, operation, working, applications of LVDT. **07**

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