Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) EXAMINATION – SUMMER 2016

Subject Code:2141003 **Date:01/06/2016**

Subject Name:Electronics Measurement and 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.**

MARKS

Q.1 Short Questions **14**

1 For measurement of mutual inductance we can use
a) Anderson bridge b) Maxwell's bridge
c) Heaviside bridge d) All of the above

2 Electrostatic instruments are mainly employed to measure:
a) Heavy currents b) Low currents c) Low voltages d) High voltages

3 Systematic errors are
a) Instrumental errors b) Environmental errors
c) Observational errors d) all of the above

4 A CRO uses
a) electromagnetic focusing b) electro static focusing
c) both focusing techniques d) no focusing techniques

5 To measure flux, devices used are based on
a) voltaic effect b) piezo-electric effect
c) Hall effect d) photo-voltaic effect

6 Anderson bridge is used to measure of:
a) Inductance b) Capacitance c) Time period
d) Resistance and capacitance

7 The resistance can be measured most accurately
a) voltmeter-ammeter method b) bridge method
c) multimeter d) megger

8 The error of an instrument is normally given as a percentage of
a) measured value b) full-scale value c) mean value d) r.m.s. value

9 The meter used for measurement of 100mV at 30MHz is
a) moving coil b) moving iron c) hot wire d) CRO

10 The bridge used to measure insulation of cables
a) Schering b) Wien c) Maxwell d) Kelvin

11 Strain gauge, LVDT and thermocouple are example of
a) Active transducer b) Passive transducer
c) Analog transducer d) Primary transducer

12 What causes the piezoelectric effect?
a) a magnetic field b) heat or dissimilar metals
c) water running on iron d) pressure on a crystal

13 The undesirable characteristics of an measuring system
a) Drift b) Dead zone c) Nonlinearity d) All of these

14 The Wien's bridges is suitable for the measurement of frequency of the range of
a) Less than 100 Hz b) 100 Hz to 100 kHz c) 1 kHz to 100 MHz
d) More than 100 MHz

Q.2	**(a)**	Compare AC and DC Bridges**.**	**03**
	(b)	Define: (1) Accuracy (2) Precision (3) Sensitivity (4) Resolution	**04**
	(c)	Explain Wien bridge in details.	**07**
		OR	
	(c)	Draw the circuit of Kelvin's double bridge. Derive the condition for balance.	**07**
Q.3	**(a)**	Explain Wheatstone Bridge.	**03**
	(b)	Explain different types of error occur in measurement.	**04**
	(c)	Explain digital storage oscilloscope in details and state its Applications.	**07**
		OR	
Q.3	**(a)**	Explain Function Generator.	**03**
	(b)	Explain True RMS Reading Voltmeter.	**04**
	(c)	Explain oscilloscope in details and state its Applications.	**07**
Q.4	**(a)**	Differentiate between primary and secondary transducers.	**03**
	(b)	Explain Vector Impedance Meter.	**04**
	(c)	Describe the construction and working of L.V.D.T. in details. State advantages and disadvantages of it.	**07**
		OR	
Q.4	**(a)**	Describe the working of a digital frequency meter	**03**
	(b)	Write a note on lock-in amplifier.	**04**
	(c)	Explain harmonic distortion analyzer.	**07**
Q.5	**(a)**	Explain the measurement of phase difference using X-OR.	**03**
	(b)	Explain Spectrum analyzer.	**04**
	(c)	Explain the working of a Multi channel DAS with block diagram.	**07**
		OR	
Q.5	**(a)**	Explain the Principle of Hall effect.	**03**
	(b)	Describe the Sample and Hold circuit operation.	**04**
	(c)	Explain the generalized block Schematic of Digital Data Acquisition System and list out its advantages over Analog Data Acquisition System.	**07**

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