Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – WINTER • 2014

Subject Code: 160905 Date: 03-12-2014

Subject Name: Electrical and Electronic Measurement

Time: 02:30 pm - 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.**

Q.1	**(a)**	Discuss with suitable examples different types of systematic errors.	**07**
	(b)	Explain salient features of Maxwell's Inductance capacitance bridge. Draw phasor diagram and derive balance equation.	**07**
Q.2	**(a)**	A four branch bridge network ABCD balanced at 1000 Hz has branches AB and BC of pure resistance of 1000Ω and 1250 Ω respectively. An unknown impedance forms the arm CD and the branch DA consists of a standard capacitor of 0.1μF capacity and negligible resistance, connected in series with a non inductive resistance of 10Ω to give balance. The supply voltage is 15 V and it is given at points B and D. Determine the components of unknown impedance. Draw necessary phasor diagram.	**07**
	(b)	Draw and explain the Wien bridge.	**07**
		OR	
	(b)	Two resistors are specified as $R_1 = 35\Omega \pm 5\%$ and $R_2 = 75\Omega \pm 4\%$. Determine the magnitude of limiting error in ohms and in percentage if the two resistances are connected in (a) series and (b) parallel .	**07**
Q.3	**(a)**	Derive the equation of unknown resistance of Kelvin's double bridge under balanced condition.	**07**
	(b)	What is the importance of the value of Earth's resistance? What are the factors which influence its value? Describe in brief the fall of potential method for measurement of earth resistance.	**07**
		OR	
Q.3	**(a)**	A Kelvin's bridge is balanced with following constants: Outer ratio arm 100 Ω and 1000 Ω; inner arms ratio 99.92Ω and 1000.6Ω ; Resistance of link 0.1 Ω ; Standard resistance 0.00377Ω. Calculate the value of unknown resistance.	**07**
	(b)	Write short note on Megger.	**07**
Q.4	**(a)**	Explain comparison method of testing of C.T.	**07**
	(b)	Discuss frequency selective wave analyzer.	**07**
		OR	
Q.4	**(a)**	Derive equation for ratio and phase angle error of a P.T.	**07**
	(b)	Explain heterodyne wave analyzer.	**07**
Q.5	**(a)**	Discuss Campbell's bridge method to measure iron losses.	**07**
	(b)	Explain Varley loop test to determine the location of cable fault.	**07**
		OR	
Q.5	**(a)**	Explain flux meter with suitable diagram.	**07**
	(b)	Discuss the continuity test conducted on long length cables.	**07**

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