Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEM-II Examination May 2012

Subject code: X20902

Subject Name: Electrical Measurement I & II

Date: 24/05/2012 **Time: 10.30 am – 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.**

Q.1	**(a)**	Describe the working of Hay's bridge for measurement of Inductance. Derive equation for balance and draw the phasor diagram of bridge under balance conditions.	**07**
	(b)	Explain Absolute measurement of current by Raileigh's current balance method.	**07**
Q.2	**(a)**	Derive the dimensions of the following quantities in L,M,T,I units: 1. Potential Gradient 2. Capacitance 3. Magnetic Flux Density	**07**
	(b)	Explain two applications of D.C. Potentiometer with necessary circuits.	**07**
		OR	
	(b)	With neat sketch explain Maxwell inductance capacitance bridge.	**07**
Q.3	**(a)**	Explain working principle of induction type energy meter.	**07**
	(b)	With phase diagram explain the working principle of current transformer. State its applications.	**07**
		OR	
Q.3	**(a)**	Which bridge is used for frequency measurement. Draw the circuit for the same.	**07**
	(b)	Explain construction and working of a basic electronic voltmeter.	**07**
Q.4	**(a)**	State the different methods of measuring medium resistances. Explain any one method in brief.	**07**
	(b)	Explain how the current range of a PMMC instrument can be extended? Also derive equation for shunt.	**07**
		OR	
Q.4	**(a)**	Describe different methods of damping with measuring instruments.	**07**
	(b)	Prove that the following equation is dimensionally correct. $e = B\,l\,v$.	**07**
Q.5	**(a)**	Describe the Lorentz method for measurement of absolute resistance.	**07**
	(b)	Derive the generalized equations for balance of AC Bridge and prove the necessary conditions for bridge balance.	**07**
		OR	
Q.5	**(a)**	Explain Tri vector meter with a neat diagram.	**07**
	(b)	Explain Ballistic Galvanometer with diagram.	**07**

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