Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER 2013

Subject Code: 130903 **Date: 23-05-2013**

Subject Name: Electrical and Electronics Measuring Instruments

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)**	Give classification of measuring instruments on the basis of operating principle.	**07**
	(b)	Explain difference between accuracy and precision.	**07**
Q.2	**(a)**	Discuss the classification of analog instrument	**07**
	(b)	Derive Torque equation of DôArsonaval Galvanometer.	**07**
		OR	
	(b)	Explain the working principle of A.C. potentiometer. State the application of AC potentiometer.	**07**
Q.3	**(a)**	Describe construction and working of PMMC instrument.	**07**
	(b)	State and explain errors in induction watt hour meter.	**07**
		OR	
Q.3	**(a)**	Describe construction and working of a Maximum Demand indicator.	**07**
	(b)	The inductance of attraction type moving iron instrument is given by $L= (10+5\theta-\theta^2)$ μH where θ is the deflection in radian from zero position. The spring constant is 12×10^{-6} N-M/rad. findout the deflection for a current of 5A.	**07**
Q.4	**(a)**	Describe use multiplier in case of voltmeter. State disadvantages of multiplier.	**07**
	(b)	Explain the measurement of three phase power using two watt meter method with necessary diagrams.	**07**
		OR	
Q.4	**(a)**	Explain working principle and use of analog tachometer.	**07**
	(b)	Describe with a circuit diagram operation of an electronic voltmeter used in differential amplifier.	**07**
Q.5	**(a)**	Explain with a neat diagram working of a Synchroscope.	**07**
	(b)	Calculate the total power and reading of the two wattmeterôs connected to measure power in 3-phase balance load, if the reactive power is 15 KVAr and load power factor is 0.8 lagging.	**07**
		OR	
Q.5	**(a)**	Explain working of hot-wire instruments. Also state advantages and disadvantages of hot-wire instruments.	**07**
	(b)	Describe construction and working of Trivector meter	**07**

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