Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER • 2014

Subject Code: 141901 **Date: 29-12-2014**

Subject Name: Mechanical Measurement and Metrology

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)**	Differentiate the followings briefly. (i) Precision and Accuracy (ii) Line and End Standards (iii) Systematic Error and Random Error (iv) Instrument and Measurement	**07**
	(b)	Explain the following characteristics of measurement system: (i) Dead zone (ii) Drift (iii) Sensitivity (iv) Threshold (v) Fidelity (vi) Linearity (vii) Overshoot	**07**
Q.2	**(a)**	Classify measurement methods. Discuss Primary, Secondary and tertiary methods of measurement with suitable examples.	**07**
	(b)	Define detector-transducer. Discuss briefly different types of mechanical detector-transducer with neat sketch.	**07**
		OR	
	(b)	Define LVDT. Explain its working with neat sketch. Also state its practical application.	**07**
Q.3	**(a)**	Sketch micrometer. Label all important parts of it. Also explain least count of micrometer with suitable example.	**07**
	(b)	Describe followings with neat sketch. (i) Slip Gauge (ii) Dial Indicator	**07**
		OR	
Q.3	**(a)**	What is comparator? Why it required? Give its classification in detail.	**07**
	(b)	Explain principle of Auto-Collimator. Sketch Auto-Collimator and state its application.	**07**
Q.4	**(a)**	Sketch two wire methods for measuring effective diameter of screw thread. Also give its limitation.	**07**
	(b)	List out the various elements required to be check during inspection of gear. Describe methods of measurement of any two in detail.	**07**
		OR	
Q.4	**(a)**	Describe working and construction of Tomlinson surface tester for surface measurement.	**07**
	(b)	Discuss any three alignment test conducted on radial drilling machine.	**07**
Q.5	**(a)**	Write short note on Thermister.	**07**
	(b)	Classify force balance pressure gauges. Explain any one in detail.	**07**
		OR	
Q.5	**(a)**	Describe construction and working of optical pyrometer.	**07**
	(b)	Explain followings briefly. (i) Stroboscope (ii) Resonance (vibrating reed) tachometer	**07**

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