Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2017

Subject Code: 2141901 Date:21/11/2017

Subject Name: Mechanical Measurement & Metrology

Time: 02:30 PM TO 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.**

			MARKS
Q.1	**(a)**	Define the terms: Measurand; Range; Least count	**03**
	(b)	Differentiate between following: (1) Threshold and Resolution (2) Accuracy and Precision	**04**
	(c)	Explain various modes of measurements with example.	**07**
Q.2	**(a)**	What is wringing of slip gauges? Explain with neat sketch.	**03**
	(b)	Discuss construction and working of telescopic gauge with neat sketch.	**04**
	(c)	Explain use of sine bar with neat sketch; also write advantages and limitations of sine bar.	**07**
		OR	
	(c)	Explain construction and working of micrometer clinometers with neat sketch.	**07**
Q.3	**(a)**	Explain the proving ring in brief.	**03**
	(b)	Explain prony brake dynamometer with neat sketch.	**04**
	(c)	What is the use of load cell? List types of load cell and explain any one of them in detail.	**07**
		OR	
Q.3	**(a)**	With neat sketch explain piezoelectric accelerometer.	**03**
	(b)	Explain stroboscope in brief.	**04**
	(c)	What is LVDT device? Explain construction and working of LVDT with neat sketch, also write advantages and limitations of LVDT.	**07**
Q.4	**(a)**	Compare thermocouple and thermistor.	**03**
	(b)	Explain construction and use of bimetallic thermometer.	**04**
	(c)	Describe the construction and working of RTD with its advantages and disadvantages.	**07**
		OR	
Q.4	**(a)**	With neat sketch discuss gear tooth vernier caliper.	**03**
	(b)	Explain parkinson gear tester with neat sketch.	**04**
	(c)	Discuss elements of screw thread with neat sketch.	**07**
Q.5	**(a)**	With neat sketch explain following elements of surface texture: Roughness; Waviness; Lay	**03**
	(b)	Explain pneumatic method of evaluating surface finish.	**04**
	(c)	Explain following methods of specifying roughness value: Peak-to-valley height method; Centre-line-average method; Root mean square method.	**07**
		OR	

Q.5	**(a)**	What is comparator? Give its classification.	**03**
	(b)	With neat sketch explain working of Johansson Mikrocator.	**04**
	(c)	What is CMM? Explain different configuration of CMM with neat sketch.	**07**

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