

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 |
