

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (OLD) EXAMINATION – WINTER 2018****Subject Code: 141901****Date: 05/12/2018****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.

- Q.1** (a) Explain the need of standards of measurements in the modern industrial system. **07**
(b) Explain line and end standards with examples. **07**
- Q.2** (a) Describe the application of following term with neat sketch: **07**
(i) Slip gages (ii) Telescopic gage (iii) Sine bar and (iv) Sine Center
(b) Describe the construction and working of a sigma comparator. Discuss its advantages and disadvantages. **07**
- OR**
- (b) Describe the construction and working of a Pneumatic comparator. Discuss its advantages and disadvantages. **07**
- Q.3** (a) Explain the three wire method to measure the effective diameter of screw thread with neat sketch. **07**
(b) Write short note on the Parkinson gear tester. **07**
- OR**
- Q.3** (a) Derive the expression for best wire size. **07**
(b) List the various elements to be checked for the accuracy of gear and describe any two. **07**
- Q.4** (a) Sketch and describe the construction and working of Tomilson surface roughness tester. **07**
(b) Write short note on Tool maker's microscope. **07**
- OR**
- Q.4** (a) Describe following types of errors and how these can be taken care of **07**
(i) Parallax error (ii) Backlash error.
(b) Describe LVDT with its advantages, limitations and applications. **07**
- Q.5** (a) Explain the working principle of bimetallic thermometer. **07**
(b) Write short notes on Bourdon tube. **07**
- OR**
- Q.5** (a) What is Load Cell? State various types of load cells and their use and explain any one of them with neat sketch. **07**
(b) Write short note on prony brake dynamometer. **07**
