

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2141901

Date:24/05/2018

Subject Name:Mechanical Measurement & Metrology

Time:10:30 AM to 01:00 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: (i) Precision (ii) Backlash (iii)Static error. | 03 |
| | (b) (i) Differentiate between Precision and Accuracy. (ii) Compare Line Standard and End Standard. | 04 |
| | (c) Explain construction and working of Piezo Electric accelerometer with neat sketch. Also state advantages and limitation. | 07 |
| Q.2 | (a) Describe (i) Profile Error (ii) Pitch Error and (iii) Runout Error in terms of Gear. | 03 |
| | (b) Explain the working principal of Pneumatic comparators with neat sketch. | 04 |
| | (c) Explain working of Tool Maker's Microscope with neat sketch and its application. | 07 |
| OR | | |
| | (c) What is RTD? Briefly describe construction and working of RTD. | 07 |
| Q.3 | (a) State what is maximum and minimum material limits according to Taylor's principal. | 03 |
| | (b) What is Sine Bar? Discuss working of Sine bar when component is of large size. | 04 |
| | (c) State working principal of Micrometer and explain its construction, working with sketch. | 07 |
| OR | | |
| Q.3 | (a) What is measurement error? Classify errors and explain any one in short. | 03 |
| | (b) Classify resistance strain gauge and explain any two. | 04 |
| | (c) Explain working of rope brake dynamometer also state advantages and limitation. | 07 |
| Q.4 | (a) Explain transducer. | 03 |
| | (b) Explain only working of Gear tooth vernire calliper with sketch and list its limitation. | 04 |
| | (c) Define following Gear tooth terminology 1. Pitch circle 2. Circular Pitch 3. Module 4. Addendum 5. Dedendum 6.Face 7. Flank. | 07 |

OR

- Q.4** (a) Compare Resistance thermometer and Thermistor. **03**
(b) List source of errors in filled system thermometers and explain any one. **04**
(c) What is Optical flat? Describe flatness checking using optical flat. **07**

- Q.5** (a) Explain the Root Mean Square value. **03**
(b) Explain working of Proving Ring. **04**
(c) Explain the methods of measuring surface finish. **07**

OR

- Q.5** (a) Explain the characteristics of good comparator. **03**
(b) Compare comparator and measuring instrument. **04**
(c) Explain construction and working of Reed type mechanical comparator. **07**

