

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV(NEW) – EXAMINATION – SUMMER 2019****Subject Code:2141901****Date:17/05/2019****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) Define: (i) Precision (ii) Accuracy **03**
(b) State and explain the important elements of measurement. **04**
(c) Describe with neat sketch International Prototype Meter (Material Length Standard) stating material composition and limitations. **07**
- Q.2** (a) Give comparison between comparator and mechanical instruments. **03**
(b) List out advantages and disadvantages of electrical comparators. **04**
(c) Sketch and explain the working of a vernier caliper used for internal and external length measurements? **07**
- OR**
- (c) Explain with neat sketch the construction and working of Johansson Mikrokator. **07**
- Q.3** (a) Explain the working principle of strain gauge load cell with neat sketch. **03**
(b) Explain Eddy-current dynamometer with sketch. **04**
(c) Describe with sketch proving ring stating its uses and advantages. **07**
- OR**
- Q.3** (a) Give the classification of Tachometers **03**
(b) Explain the working principle of stroboscope. **04**
(c) Explain hydraulic force meter and pneumatic force meter with advantages and disadvantages. **07**
- Q.4** (a) Give the comparison between resistance thermometer and thermocouple. **03**
(b) List out the advantages and disadvantages of thermistors. **04**
(c) Describe with sketch a liquid-in-glass thermometer. Explain its application. **07**
- OR**
- Q.4** (a) Give the classifications of threads. **03**
(b) Explain the common errors in threads. **04**
(c) Explain surface texture and elements of surface roughness. **07**
- Q.5** (a) State the factors which are responsible for surface finishing. **03**
(b) List out and explain comparison methods of measuring surface finish. **04**
(c) Derive the expression for best wire size. **07**
- OR**
- Q.5** (a) Give the comparison between systematic errors and random errors **03**
(b) Write a short note on : 'Coordinate Measuring Machine' **04**
(c) Explain optical pyrometer with neat sketch. **07**
