

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018****Subject Code:2141901****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 working principle of Piezoelectric Accelerometer with neat sketch. **03**  
(b) Differentiate the term (1) Limit and Span **04**  
(2) Reproducibility and Repeatability  
(c) Explain Generalized Measurement System using suitable example. **07**
- Q.2** (a) State the working principal of Vernier Caliper. How least count of Vernier caliper can be calculated? **03**  
(b) Define Thermometric Fluid. List name of Thermometric fluid. State Characteristics of good Thermometric fluid **04**  
(c) Explain micrometer Screw with neat sketch, working principle, Construction and Least count. **07**
- OR**
- (c) Explain the procedure to measure angle using Sinbar table and state it's limitation. **07**
- Q.3** (a) Differentiate Accuracy & Precision **03**  
(b) Write a short note on Errors in Screw Thread. **04**  
(c) Explain Constant chord method for gear tooth measurement. **07**
- OR**
- Q.3** (a) Give comparison between involute and cycloidal gears. **03**  
(b) Distinguish between Primary, Secondary, Tertiary and working standards of length. **04**  
(c) Explain Three wire method for screw thread measurement. **07**
- Q.4** (a) Explain surface texture characteristics. **03**  
(b) Explain adverse effect of poor surface finish. **04**  
(c) Classify torque and power measurement techniques. Explain torsion bar dynamometer. **07**
- OR**
- Q.4** (a) Define Errors & Classify the Errors. **03**  
(b) Write a Short note on LVDT. **04**  
(c) Sketch and describe the construction and working of Tomlinson surface roughness tester. **07**
- Q.5** (a) Explain Eddy current Dynamometer. **03**  
(b) Write short note on Optical Flat. **04**  
(c) Classify the Comparators and explain Sigma Comparators with neat sketch. **07**
- OR**
- Q.5** (a) Explain the calibration of Thermometer. **03**  
(b) Write short note on LVDT with respect to force measurement **04**  
(c) Explain Tool Maker's Microscope with neat sketch. **07**

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