

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – WINTER • 2014****Subject Code: 141901****Date: 29-12-2014****Subject Name: Mechanical Measurement and Metrology****Time: 02:30 pm - 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)** Differentiate the followings briefly. **07**
 (i) Precision and Accuracy
 (ii) Line and End Standards
 (iii) Systematic Error and Random Error
 (iv) Instrument and Measurement
- (b)** Explain the following characteristics of measurement system: **07**
 (i) Dead zone (ii) Drift (iii) Sensitivity (iv) Threshold (v) Fidelity (vi) Linearity
 (vii) Overshoot
- Q.2 (a)** Classify measurement methods. Discuss Primary, Secondary and tertiary **07**
 methods of measurement with suitable examples.
- (b)** Define detector-transducer. Discuss briefly different types of mechanical **07**
 detector-transducer with neat sketch.
- OR**
- (b)** Define LVDT. Explain its working with neat sketch. Also state its practical **07**
 application.
- Q.3 (a)** Sketch micrometer. Label all important parts of it. Also explain least count of **07**
 micrometer with suitable example.
- (b)** Describe followings with neat sketch. **07**
 (i) Slip Gauge (ii) Dial Indicator
- OR**
- Q.3 (a)** What is comparator? Why it required? Give its classification in detail. **07**
- (b)** Explain principle of Auto-Collimator. Sketch Auto-Collimator and state its **07**
 application.
- Q.4 (a)** Sketch two wire methods for measuring effective diameter of screw thread. Also **07**
 give its limitation.
- (b)** List out the various elements required to be check during inspection of gear. **07**
 Describe methods of measurement of any two in detail.
- OR**
- Q.4 (a)** Describe working and construction of Tomlinson surface tester for surface **07**
 measurement.
- (b)** Discuss any three alignment test conducted on radial drilling machine. **07**
- Q.5 (a)** Write short note on Thermister. **07**
- (b)** Classify force balance pressure gauges. Explain any one in detail. **07**
- OR**
- Q.5 (a)** Describe construction and working of optical pyrometer. **07**
- (b)** Explain followings briefly. **07**
 (i) Stroboscope (ii) Resonance (vibrating reed) tachometer
