

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014**

**Subject code: 1722804**

**Date: 23-06-2014**

**Subject Name: Metrology and Computer Aided Inspection**

**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) Metrological characteristics of measuring instrument. **07**  
(b) Discuss the characteristics of various materials for fabrication of different parts of measuring instrument. **07**
- Q.2** (a) Discuss the advantage and limitation of vernier calipers, micrometer screw gauge and dial indicators. **07**  
(b) Terminology for the surface roughness. **07**
- OR**
- (b) Why is it that the use of a sine bar is not recommended for angle larger than  $45^{\circ}$  with the reference plane. **07**
- Q.3** (a) Explain the difference between comparator and measuring instrument. State the field of application of comparator. **07**  
(b) Enlist various comparator used in metrology and explain working of sigma comparator. **07**
- OR**
- Q.3** (a) Explain physical & thermal properties of a gauge block. **07**  
(b) Define cylindricity. Explain any method to measure the same. **07**
- Q.4** (a) What is transducer? Types, Application and features of transducer in measurement. **07**  
(b) Discuss the machine vision system. **07**
- OR**
- Q.4** (a) Write a short note on LASER Interferometer. **07**  
(b) Discuss the method of measuring straightness using autocollimator. **07**
- Q.5** (a) Write a short note on CMM and discuss important features of CMM. **07**  
(b) State the principle & working of inductive proximity sensors. **07**
- OR**
- Q.5** (a) Discuss the method of measuring tool wear. **07**  
(b) What is tolerance stack? Explain tolerance analysis. **07**

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