

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

Subject code: 1722804

Date: 02-01-2014

Subject Name: Metrology & Computer Aided Inspection

Time: 10.30 am – 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.

- Q.1** **a** Explain the principle of interference. How do you measure flatness using this principle? **07**
 b Discuss the method of measuring straightness using autocollimator **07**
- Q.2** **a** What is the limitation of sine bar? Explain the term traceability & GD. **07**
 b With neat sketch discuss the principle of pneumatic comparator giving specific application. **07**
- OR**
- b** What is tolerance stack? Explain tolerance analysis. **07**
- Q.3** **a** Define cylindricity. Explain any method to measure the same. **07**
 b Sketch the general layout of a surface texture & explain the various terms. **07**
- OR**
- Q.3** **a** How does LASER help in on line measurement of diameter? **07**
 b Explain straightness measurement using LASER. **07**
- Q.4** **a** Discuss the steps in machine vision. **07**
 b Explain the use of machine vision in measuring surface roughness. **07**
- OR**
- Q.4** **a** Discuss the principle of microwave sensing with its use in any industrial application. **07**
 b Explain physical & thermal properties of a gauge block. **07**
- Q.5** **a** How does CMM help in computer aided quality control? **07**
 b Explain the use of acoustical techniques in metrology. **07**
- OR**
- Q.5** **a** State the principle & working of inductive proximity sensors. **07**
 b Discuss the method of measuring tool wear. **07**
