

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1722804

Date: 05-12-2014

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.**

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|------------|----------|---|-----------|
| Q.1 | a | Explain the use of contact sensors for surface finish measurements. | 07 |
| | b | Discuss the working principle of bar code systems. | 07 |
| Q.2 | a | What is machine vision? Explain normalization. | 07 |
| | b | Describe manufacturing application of photo detectors. | 07 |
| | | OR | |
| | b | What is tolerance stack? Discuss the method of tolerance analysis. | 07 |
| Q.3 | a | Discuss the methods of measuring cylindricity. | 07 |
| | b | Explain the method of measuring straightness by LASER. | 07 |
| | | OR | |
| Q.3 | a | What is interference? Explain the use of optical flat in detecting flatness. | 07 |
| | b | What is gauging? State Taylor's principle of gauging. State the limitations of the principle. | 07 |
| Q.4 | a | Explain classification of CMM stating applications. | 07 |
| | b | Discuss the principle, working & construction of mechanical comparator. | 07 |
| | | OR | |
| Q.4 | a | Explain the role of acoustical measurement in metrology? | 07 |
| | b | Discuss methods of assessing & presenting experimental DATA. | 07 |
| Q.5 | a | How do optoelectronic devices help in on line monitoring systems? | 07 |
| | b | Explain the principle of pneumatic comparator with neat sketch with application. | 07 |
| | | OR | |
| Q.5 | a | What is traceability? Explain the method to set an angle of 70° by sine bar. | 07 |
| | b | Discuss the method of calibrating length standard. | 07 |
