Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: 143402 **Date: 23-12-2013**

Subject Name: Metrology and Computer Aided Inspection

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)**	Write the application and different types of Coordinate Measuring Machine. Explain any one CMM measuring principle with neat sketch.	**07**
	(b)	Define linear measurement. Explain in brief about Vernier caliper with sketch.	**07**
Q.2	**(a)**	Define Error in measurement. Write the types of Error and explain about any two Errors in brief.	**07**
	(b)	Write the Sine Principle. Explain how to find unknown angle by using the principle with sketch.	**07**
		OR	
	(b)	Explain how to measure the surface finish by using Tomlinson surface meter? Explain the working principle of it.	**07**
Q.3	**(a)**	Write the different terminology used in surface roughness. Describe any four terminologies.	**07**
	(b)	What is the role of legal metrology? Why calibration is required for measuring instruments?	**07**
		OR	
Q.3	**(a)**	Write the working principle of Laser Interferometer with neat sketch. Write the uses.	**07**
	(b)	Write the working principle of Michelson Interferometer with neat sketch. Write the uses.	**07**
Q.4	**(a)**	Write the objectives of Quality Control. Write the factors affecting Quality.	**07**
	(b)	Draw and explain fishbone chart for action plan to achieve the Quality.	**07**
		OR	
Q.4	**(a)**	Write short notes about Six Sigma. Write the advantages of it.	**07**
	(b)	Write the objectives of Quality Assurance System.	**07**
Q.5	**(a)**	Explain about Vision system with suitable block diagram.	**07**
	(b)	What do you understand by scanning Laser gauge? Explain with schematic diagram.	**07**
		OR	
Q.5	**(a)**	Define gray scale analysis. Write the advantages and limitations of computers in Metrology.	**07**
	(b)	Write the working principle of Machine Vision system with block diagram	**07**

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