Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) EXAMINATION – SUMMER 2016

Subject Code:2143402 **Date:03/06/2016**

Subject Name:Metrology and Computer Aided Inspection

Time:10:30 AM to 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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	_____ is the field of knowledge dealing with the problem of measurement.	
	2	A set of experimental operations carried out with the object of determining the value of quantity is called ___.	
	3	_____ of the lapped faces should be avoided to preclude the risk of tarnishing.	
	4	What is the difference between correction and correction factor?	
	5	What factors are to be considered in selecting the sensitivity of a level?	
	6	Define the following term 'Repeatability' relating to spirit levels.	
	7	Define the following term 'Settling time' relating to spirit levels.	
	8	Describe the Optical flat in brief.	
	9	Name three materials commonly used for gauges.	
	10	A locking screw is provided on vernier caliper gauges to enable quick and accurate reading. True or False?	
	11	If the NOT GO gauge assembles with the part being inspected, it is considered as a basis for acceptance. True or False?	
	12	Name the different methods of dimensional measurements using laser.	
	13	What are the three distinct groups of categorisation of image cameras?	
	14	What are the advantages of analog image sensors?	
Q.2	**(a)**	What is the need of calibration?	**03**
	(b)	Explain with neat sketch how a vernier caliper is used for linear measurements.	**04**
	(c)	Describe the different types of errors in measurement and their causes.	**07**
		OR	
	(c)	Define Sine Principle. Explain how unknown angles are measured by using Sine Principle?	**07**
Q.3	**(a)**	Differentiate between, Systematic error and Random error.	**03**
	(b)	Explain use of height gauge with neat sketch.	**04**
	(c)	Write short notes about Tool maker's microscope with neat sketch.	**07**
		OR	

Q.3	**(a)**	Explain the difference between Precision and accuracy with example.	**03**
	(b)	Explain working principle of Micrometer with neat sketch.	**04**
	(c)	Write the terminology used for surface roughness with simple sketch.	**07**
Q.4	**(a)**	Define flatness. How it is to be measured?	**03**
	(b)	What do you mean by Wringing of Slip gauges?	**04**
	(c)	Draw and explain the various components of Optical Bevel protector.	**07**
		OR	
Q.4	**(a)**	Explain the principle of Autocollimator.	**03**
	(b)	Explain and draw the schematic arrangement of Laser Interferometer.	**04**
	(c)	Explain the Zero defect principle and write any five advantages of Zero defects.	**07**
Q.5	**(a)**	Write the types of Coordinate Measuring Machine.	**03**
	(b)	Explain in brief about any one CMM with neat sketch.	**04**
	(c)	Write short notes about POKA – YOKE.	**07**
		OR	
Q.5	**(a)**	Define the term Total quality control.	**03**
	(b)	Explain about Quality assurance.	**04**
	(c)	Write short note on interchangeability.	**07**

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