

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018****Subject Code:2143402****Date:05/12/2018****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.

		MARKS
Q.1	(a) State necessity and objectives of metrology.	03
	(b) Define Accuracy & Precision.	04
	(c) Describe the different types of errors in measurement and their causes.	07
Q.2	(a) Write short note on dimensional & form tolerance.	03
	(b) Differentiate between Systematic error and Random error.	04
	(c) Explain the construction and working of a Vernier Caliper.	07
	OR	
	(c) Name the different types of the Comparators and explain Sigma Comparators with neat sketch.	07
Q.3	(a) Write short note slip gauge & wringing of slip gauge.	03
	(b) Explain working principle of Micrometer with neat sketch.	04
	(c) Write the terminology used for surface roughness with simple sketch.	07
	OR	
Q.3	(a) Explain various forms of Gear teeth.	03
	(b) Define straightness, flatness & roundness.	04
	(c) Explain principle of Auto-collimator with sketch.	07
Q.4	(a) Briefly explain the working principle of LASER.	03
	(b) Explain construction & working principle of optical microscope.	04
	(c) Write short note on working of Tool makers microscope.	07
	OR	
Q.4	(a) Explain the 'Gauge factor'.	03
	(b) Describe the working of Vernier bevel protractor.	04
	(c) Explain about Height gauge with neat sketch.	07
Q.5	(a) Write short note on Computer aided Inspection.	03
	(b) Explain the principle of Nano-metrology.	04
	(c) Explain in brief about any one CMM with neat sketch.	07
	OR	
Q.5	(a) Explain different types of surface texture.	03
	(b) Explain the function of machine vision systems.	04
	(c) State application of Machine vision in metrology.	07
