Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Subject code: X21903

Subject Name: Mechanical Measurement & Metrology

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 working principle of Micrometer Screw along with neat sketch.	**07**
	(b)	Describe working principle of Auto Collimator in detail	**07**
Q.2	**(a)**	Derive the equation for 'best wire size' to measure effective diameter of screw	**07**
	(b)	Explain static and dynamic characteristics of measuring instruments	**07**
		OR	
	(b)	What do you mean by standardization and simplification? Explain in detail. Also explain selective assembly with suitable example.	**07**
Q.3	**(a)**	How can you measure diameter of large bores? Explain with suitable example	**07**
	(b)	Describe various methods of taper measurement	**07**
		OR	
Q.3	**(a)**	Draw a neat sketch of Gear Tooth Caliper and explain different parts of it.	**07**
	(b)	Explain 'Sigma Comparator' with neat sketch	**07**
Q.4	**(a)**	Explain working principle of Tomlinson Surface Meter with neat sketch	**07**
	(b)	Describe various geometrical tolerance with their symbol	**07**
		OR	
Q.4	**(a)**	Describe different methods to measure 'Ra' value of any surface	**07**
Q.4	**(b)**	Explain working principle of 'Thermocouple' in detail along with its applications	**07**
Q.5	**(a)**	Explain the calibration process of a dial pressure gauge using Dead Weight Pressure instrument	**07**
	(b)	Explain alignment test on lathe machine	**07**
		OR	
Q.5	**(a)**	Describe calibration process of high speed fan using stroboscope	**07**
	(b)	Explain working principle of pressure transducer in detail	**07**