Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV EXAMINATION – SUMMER 2016

Subject Code:141901 **Date:03/06/2016**

Subject Name:Mechanical Measurement & Metrology

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.**

1.

Q.1	**(a)**	With the help of neat sketch, explain the working principle, construction and applications of Vernier Calliper.	**07**
	(b)	Describe with sketch, working and applications of the following: (i) Sin bar (ii) Sin center	**07**
Q.2	**(a)**	What is a comparator? Explain the desirable characteristics that any comparator must possess.	**07**
	(b)	State the limitations of gear tooth vernier caliper and explain the Base Tangent method to measure gear tooth thickness.	**07**
		OR	
	(b)	(i) Explain the various factors to be considered while selecting a measuring instrument.	**04**
		(ii) State the limitations of material length standard.	**03**
Q.3	**(a)**	With the help of neat sketch , explain the three wire method to measure the effective diameter of given screw thread.	**07**
	(b)	Explain the working principle and application of Solex Pneumatic comparator.	**07**
		OR	
Q.3	**(a)**	Describe the construction and working principle of The Taylor Hobson Talysurf surface roughness tester with the help of neat sketch.	**07**
	(b)	Explain the Tool Maker's microscope in detail and also state its applications.	**07**
Q.4	**(a)**	Explain any three alignment tests to be performed on Lathe in detail.	**07**
	(b)	Explain NPL Flatness Interferometer with the help of neat sketch.	**07**
		OR	
Q.4	**(a)**	Describe the working of a Bimetallic thermometer with the help of a neat sketch.	**07**
	(b)	Explain the working principle of Total radiation pyrometer along with its advantages.	**07**
Q.5	**(a)**	Explain the Thermocouple Vacuum gauge in detail and also state its limitations.	**07**
	(b)	Explain the construction and operation of Rope brake type absorption dynamometer.	**07**
		OR	
Q.5	**(a)**	Explain with a neat sketch, the constructional features and basic working principle of Mcleod gauge used for the measurement of low pressure.	**07**
	(b)	Define and explain the following terms: (i) Thershold (ii) Resolution (iii) Reproducability (iv) Hysteresis	**07**

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