Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2141901 Date:17/05/2019

Subject Name: Mechanical Measurement & Metrology

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)**	Define: (i) Precision (ii) Accuracy	**03**
	(b)	State and explain the important elements of measurement.	**04**
	(c)	Describe with neat sketch International Prototype Meter (Material Length Standard) stating material composition and limitations.	**07**
Q.2	**(a)**	Give comparison between comparator and mechanical instruments.	**03**
	(b)	List out advantages and disadvantages of electrical comparators.	**04**
	(c)	Sketch and explain the working of a vernier caliper used for internal and external length measurements?	**07**
		OR	
	(c)	Explain with neat sketch the construction and working of Johansson Mikrokator.	**07**
Q.3	**(a)**	Explain the working principle of strain gauge load cell with neat sketch.	**03**
	(b)	Explain Eddy-current dynamometer with sketch.	**04**
	(c)	Describe with sketch proving ring stating its uses and advantages.	**07**
		OR	
Q.3	**(a)**	Give the classification of Tachometers	**03**
	(b)	Explain the working principle of stroboscope.	**04**
	(c)	Explain hydraulic force meter and pneumatic force meter with advantages and disadvantages.	**07**
Q.4	**(a)**	Give the comparison between resistance thermometer and thermocouple.	**03**
	(b)	List out the advantages and disadvantages of thermistors.	**04**
	(c)	Describe with sketch a liquid-in-glass thermometer. Explain its application.	**07**
		OR	
Q.4	**(a)**	Give the classifications of threads.	**03**
	(b)	Explain the common errors in threads.	**04**
	(c)	Explain surface texture and elements of surface roughness.	**07**
Q.5	**(a)**	State the factors which are responsible for surface finishing.	**03**
	(b)	List out and explain comparison methods of measuring surface finish.	**04**
	(c)	Derive the expression for best wire size.	**07**
		OR	
Q.5	**(a)**	Give the comparison between systematic errors and random errors	**03**
	(b)	Write a short note on : ‘Coordinate Measuring Machine’	**04**
	(c)	Explain optical pyrometer with neat sketch.	**07**

****