

**GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019

**Subject Code: 2141901****Date: 13/12/2019****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.

	MARKS
<b>Q.1</b> (a) State necessity and objectives of metrology.	<b>03</b>
(b) Differentiate following terms: i) Accuracy and precision ii) Repeatability and Reproducibility	<b>04</b>
(c) Describe errors and sources of errors.	<b>07</b>
<b>Q.2</b> (a) What precaution should be taken while using micrometer.	<b>03</b>
(b) Write a short note on : Spirit level	<b>04</b>
(c) Explain the construction and working of a Vernier Caliper.	<b>07</b>
<b>OR</b>	
(c) Explain the followings: i) Mechanical strain gauges ii) Gauge factor	<b>07</b>
<b>Q.3</b> (a) Write application and limitation of angle gauges.	<b>03</b>
(b) Explain Proving ring with sketch.	<b>04</b>
(c) Describe with sketch the construction and working of a RTD. Give advantages and disadvantages of RTD.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) What is a 'Peltier effect' in thermocouple?	<b>03</b>
(b) Explain hemispherical bore gauge with applications.	<b>04</b>
(c) What are absorption dynamometers? Explain any one with a neat sketch.	<b>07</b>
<b>Q.4</b> (a) List out various characteristics of good comparators	<b>03</b>
(b) Write a short note on seismic accelerometer.	<b>04</b>
(c) Explain Tool maker's Microscope.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Write the advantages of Coordinate measuring machines	<b>03</b>
(b) Explain Liquid in glass Thermometer.	<b>04</b>
(c) Explain the construction and working of LVDT with its advantage and disadvantages.	<b>07</b>
<b>Q.5</b> (a) Explain surface texture characteristics.	<b>03</b>
(b) Explain adverse effect of poor surface finish.	<b>04</b>
(c) Explain Two wire method for measuring effective diameter of thread.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) Give comparison between involute and cycloidal gears.	<b>03</b>
(b) Explain Parkinson gear tester with neat sketch.	<b>04</b>
(c) Sketch and describe the construction and working of Tomlinson surface roughness tester.	<b>07</b>

\*\*\*\*\*