

**R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT**  
(An Autonomous College U/s UGC Act 1956)

**B.VOC SEMESTER-I, SEMESTER END EXAMINATION – SUMMER 2025**

**Subject Code: 1PT104**

**Date: 09-06-2025**

**Subject Name: MECHANICAL METROLOGY-I**

**Time: 11:00 AM to 01:00 PM**

**Total Marks: 50**

## Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Attempt all questions in the question paper.
3. The figures to the right of each question indicate full marks. Make suitable assumptions with proper justification wherever required.
4. Simple, non-programmable scientific calculators are permitted.
5. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A-Application, N-Analyze, E-Evaluate, C-Create), CO - Course Outcomes.

	Marks	BL	CO
<b>Q.1 Multiple-Choice Questions</b>	<b>[05]</b>		
(a) The term "calibration" refers to:	<b>1</b>	<b>R</b>	<b>1</b>
(i) The accuracy of an instrument    (ii) The range of an instrument (iii) Adjusting an instrument to match a standard    (iv) The material an instrument is made from			
(b) Which of the following instruments is used for precise linear measurements?	<b>1</b>	<b>U</b>	<b>1</b>
(i) Thermometer    (ii) Barometer (iii) Micrometer    (iv) Voltmeter			
(c) The main purpose of using slip gauges is to:	<b>1</b>	<b>U</b>	<b>2</b>
(i) Measure the temperature of a component    (ii) Measure the width of an object (iii) Measure the internal diameter of an object    (iv) Serve as a reference standard for measuring length			
(d) The accuracy of a comparator mainly depends on:	<b>1</b>	<b>U</b>	<b>3</b>
(i) Length of object    (ii) Magnification system and stability (iii) Skill of the operator    (iv) Surface finish of the table			
(e) What is sine centre?	<b>1</b>	<b>R</b>	<b>2</b>

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|------------------------------------|--|
| (i) Centre of sine bar             | (ii) Sine bar with block holding centres |
| (iii) Sine bar with hole in centre | (iv) Sine bar with hollow rod in centre  |

<b>Q.2 Attempt Any Three</b>	<b>[15]</b>		
(a) Explain Objective of Metrology and Measurement.	5	R	1
(b) Explain Accuracy and Precision.	5	U	1
(c) Explain various method of measurement	5	U	1
(d) Write short note on Graduated scale.	5	R	2
<b>Q.3 Attempt Any Three</b>	<b>[15]</b>		
(a) State the working principal and construction of Vernier caliper. How least count of Vernier caliper can be calculated?	5	R	2
(b) Explain vernier height gauge with neat sketch with it working.	5	U	2
(c) Explain the use of sine bar with neat sketch.	5	U	2
(d) Explain the construction and working of vernier bevel protector.	5	U	2
<b>Q.4 Attempt Any Three</b>	<b>[15]</b>		
(a) Compare Comparator and measuring instruments.	5	R	3
(b) Explain construction and working of Reed type mechanical comparator.	5	U	3
(c) Explain the characteristics of good comparator.	5	U	4
(d) What is CMM? List types of CMM.	5	R	4

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