

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech. Summer 2018 - 19 Examination**

**Semester:4**  
**Subject Code: 03109251**  
**Subject Name: Mechanical Measurement and Metrology**

**Date: 29/04/2019**  
**Time: 2:00pm to 4:30pm**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Objective Type Questions – (All are compulsory) (Each of one mark) (15)**

1. Length of SINE bar is specified by:
  - (a) Center distance between two rollers
  - (b) Weight of the sine bar
  - (c) Total length of the sine bar
2. RTD is used to measure : (a) Temperature (b) Pressure (c) Velocity (d) Force
3. Which of the instrument working principle is “ SCREW and NUT” :
  - (a) Vernier caliper
  - (b) RTD
  - (c) Bevel Protractor
  - (d) Micrometer
4. The degree of closeness of the measured value of a certain quantity with its true value is known  
 As: (a) Accuracy , (b) Precision, (c) Standard, (d) Sensitivity
5. Stroboscope is used for measuring: (a) Temperature (b) Pressure (c) Force (d) RPM
6. The difference between maximum and minimum limit of any instrument is defined  
 by\_\_\_\_\_.
7. Dynamometer is used to measure\_\_\_\_\_.
8. For Metric thread included angle is \_\_\_\_\_
9. Define Metrology.
10. Hydraulic load cell is used to measure \_\_\_\_\_.
11. Write any two Static characteristics of measuring instrument.
12. Define Temperature.
13. Which of the instrument will measure Precise angle:
 

Sine Bar or Bevel Protractor
14. A 0.02mm least count vernier caliper have main scale reading 12 and vernier scale reading 12.  
 What is the total reading?
15. Write full form of CLA.

**Q.2 Answer the following questions. (Attempt any three) (15)**

- A) Explain working of LVDT with neat sketch
- B) Define : Error , Accuracy, Pitch, Lead , Module
- C) Explain Generalized Measurement system with Block Diagram.
- D) Compare Line standard with End Standard.

**Q.3 A) Explain construction and working of Sigma comparator with neat sketch. (07)**

- B) Explain with sketch measurement of effective diameter with three wire method. (08)

**OR**

- B) Explain the Construction and working of Micrometer with neat sketch. (08)

**Q.4 A) Discuss the Gear tooth Terminology with neat sketch. (07)****OR**

- A) Explain Gear tooth Vernier with neat Sketch. (07)

- B) Explain Rope brake dynamometer with neat sketch.. (08)