

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech. (M.E.) (Sem.-6)**  
**MECHANICAL MEASUREMENT AND METROLOGY**

Subject Code : BTME-602-18

M.Code : 79651

Date of Examination : 05-07-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) Discuss the importance of linearity in measuring instruments.
- b) Explain the terms: (a) Drift (b) Threshold.
- c) Give a classification of errors in measurement.
- d) List the advantages of electrical transducers.
- e) How the least count of a vernier calliper is calculated?
- f) Define gauge factor of strain gauge.
- g) Explain the difference between roughness and waviness.
- h) List the common metals used in bimetallic strips.
- i) Define the terms 'Run out' and 'Concentricity'.
- j) Write the differences between precision and accuracy.

## SECTION-B

2. Discuss loading effect with respect to a measuring system.
3. What is sine bar? How it is used for angle measurement?
4. Explain the working principal of Resistive Potentiometer.
5. Discuss the major applications of pneumatic comparators.
6. Explain the working principle of piezo-electric transducer. What are its advantages and limitations?

## SECTION-C

7.
  - a) Explain the following methods of quantifying surface roughness : (i) Rz value, (ii) RMS value, and (iii) Ra value.
  - b) With the help of a neat sketch, describe the construction and working of a pitch-measuring instrument.
8.
  - a) What is temperature compensation in Strain Gauges? Why is it needed?
  - b) Explain, with a neat sketch, determination of force using a load cell.
9. With the help of a neat sketch, explain the construction details of a tool maker's microscope. Briefly explain, surface illumination modes available in a tool maker's microscope. Discuss the important applications of a tool maker's microscope.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**