

**BACHELOR OF VOCATION**  
**Mechanical Manufacturing**  
**&**  
**Mechatronics**

**Subject: Measurement and Metrology**

**Subject Code: ME-503**

**Semester: Second**

**July 2022**

**Theory (External): 35 Marks**

**Time: 03 Hours**

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**Instructions to the Students**

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

**Roll Number**

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**SECTION -A (SHORT/OBJECTIVE TYPE QUESTIONS)**  
(10x1=10 Marks)

- A. Define surface microscopy with industrial applications.
- B. Define non-contact profiling systems with examples.
- C. Define the concept of surface finish related to manufacturing industries.
- D. Discuss the applications of Interferometry in manufacturing industries.
- E. Discuss the function of spirit bars along with applications.
- F. Differentiate between squareness and roundness with suitable industrial applications.
- G. Differentiate between Temperature, weight and Pressure with examples.
- H. Define the concept of Comparators with neat diagram.
- I. Define the concept of Surface plates with industrial applications.
- J. Define Inspection and its need.

**SECTION -B (ESSAY TYPE QUESTIONS)**  
(5x5=25 Marks)

1. What is error and describe the different types of error in measurement with suitable examples.
2. Explain the construction, working and principle of dial indicator with neat and clean diagram along with industrial applications.
3. Explain the construction, working and principle of micrometers with neat and clean diagram along with industrial applications.
4. Define the concept of Taper and Radius measurement with neat diagram and example.
5. Describe advanced measurement of spur gear with neat diagram.
6. Explain the concept of computer aided tolerancing with example and diagram.
7. Describe the factors affecting surface roughness with suitable example.
8. Differentiate between limit, fit and Tolerance with neat diagram and examples.

\*\*\*\*\*END OF THE PAPER\*\*\*\*\*