

**DIPLOMA IN MECHANICAL ENGINEERING  
(DME)**

**Term-End Examination,**

**December 2019**

**BME-062 : METROLOGY AND  
INSTRUMENTATION**

*Time : 2 Hours]*

*[Maximum Marks : 70*

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*Note : (i) Attempt **any five** questions.*

*(ii) All questions carry **equal** marks.*

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1. Define any seven of the following: 7×2=14
- a) Actual size and True size
  - b) Hysteresis
  - c) Span and Range of measurement
  - d) Tolerances
  - e) Allowances
  - f) Sensitivity and least count
  - g) Accuracy
  - h) Precision
2. a) What is meant by Calibration? What are the primary standards of length and time? Mention the procedure of calibrating a pressure gauge. 7
- b) What are the various light sources commonly used in Interferometry? Can we use ordinary light as a source of light in interferometry? Explain in detail. 7

(2)

3. a) What are the types of Comparators? Explain any one of them. 7  
b) Discuss the types of CMM and explain any one of them. 7
4. a) Describe the procedure to find the least count of a Vernier caliper. What do you mean by negative error of the same? 7  
b) What is Screw-thread micrometer? Discuss its application and limitations for screw thread inspection. 7
5. a) Explain applications of combination set for angular measurement with its advantages. 7  
b) Describe the working principle of capacitive transducer used to measure any mechanical signal. 7
6. a) Discuss the basic working principle of a surface roughness measuring instrument. Explain how it is different from other measuring instruments. 7  
b) Explain Limit gauges. Discuss their advantages and applications in measurements. 7
7. Write short notes in **any four** of the following: 4×3½=14
- a) Hole and shaft
  - b) Vernier height gauge
  - c) Zero error in micrometer
  - d) Clinometer
  - e) Static and Dynamic response
  - f) Sine bar

