

REG. NO: .....

NAME : .....

**SIXTH SEMESTER B.TECH DEGREE EXAMINATION**

**(2013 Scheme)**

**13.601 METROLOGY AND INSTRUMENTATION (MP)**

**Time: 3 Hours**

**Max. Marks: 100**

**Part A**

*(Answer **all** questions; each carries 2 marks)*

1. Explain the basic elements of measurement system.
2. What is meant by standardization?
3. Distinguish between primary and secondary standards.
4. Explain Taylor's principle as explained to limit gauges.
5. Define the terms basic size, tolerance, deviation and allowance.
6. Explain the term interchangeability.
7. What is 'Centre Line Average' Roughness (Ra)?
8. What are the advantageous of mechanical comparators?
9. What is resistance strain gauge?
10. What is transducer? Explain its classification

**(10 X 2= 20Marks)**

**Part B**

*(Answer any **ONE FULL** questions from each module; each carries 20 marks)*

**MODULE I**

11. (a) Explain the terms.
  - i. Sensitivity and Readability.
  - ii. Repeatability and Reproducibility(b) sketch an optical bevel protractor and explain its use in measurement.
12. (a) Explain the principle, requirements, limitations and uses of sine bars.  
(b) Derive an expression for the sensitivity of a spirit level.

**(2X 10 = 20Marks)**

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**[P.T.O]**

## MODULE II

13. (a) Differentiate hole basis system with shaft basis system of fits.  
(b) Discuss the use of Taper plug gauges.

**(2x10=20 Marks)**

14. (a) Describe the various methods for checking squareness of machined surface.  
(b) Describe the following tests for parallelism.  
i. Parallelism of two planes.  
ii. Parallelism of two axis.

**(2x10=20 Marks)**

## MODULE III

15. (a) With the a neat sketch explain the working of a Pneumatic Comparator  
(b) Explain the working of AC Laser Interferometer.

**(2x10=20 Marks)**

16. (a) Explain Angle Dekkor with a neat sketch.  
(b) Explain with neat sketch the working of Talysurf.

**(2x10=20 Marks)**

## MODULE IV

17. (a) Describe construction of hydraulic Dynamometer and its working for power measurement.  
(b) Mention the advantages and disadvantages of CMM.

**(2x10=20 Marks)**

18. (a) Explain Construction details of Column type CMM.  
(b) Explain the various types of errors encountered in measurement.

**(2x10=20 Marks)**

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