

**B.Tech. MECHANICAL ENGINEERING  
(BTMEVI)**

**Term-End Examination**

**June, 2013**

**BIME-019 : METROLOGY**

*Time : 3 hours*

*Maximum Marks : 70*

*Note: Attempt any five questions. All questions carry equal marks.*

1. What are systematic errors? Explain the following errors with example : 2+4+4+4
  - (a) Instrumental error
  - (b) Environmental error
  - (c) Observational error
  
2. (a) Explain the principle of a Sine bar with the help of a diagram. 7+7  
(b) Explain **any two** of the following instrument :
  - (i) Vernier bevel protractor
  - (ii) Dial bevel protractor
  - (iii) Optical bevel protractor
  
3. (a) Explain **any two** of the following methods of measuring surface roughness : 7+7
  - (i) Touch inspection
  - (ii) Visual inspection
  - (iii) Scratch inspection
  - (iv) Microscopic inspection  
(b) Describe straight edge. List its main applications.

4. (a) Describe the procedure for measuring 'Major diameter' of a screw thread by using a Bench micrometer. 7+7
- (b) Name various methods used in the measurement of tooth thickness. Explain any one of them.
5. (a) Write short notes on the following : 7+7
- (i) Sequential sampling plan
- (ii) Continuous sampling plan
- (b) What are control charts for variables ? Explain any one of the control charts in this category.
6. (a) Explain Briefly the following : 7+7
- (i) Line standard
- (ii) End standard
- (b) Name the different types of Vernier callipers. Explain any one of them.
7. (a) Explain two wire method of measuring effective diameter of a screw thread ? 7+7
- (b) Explain the construction and working of a auto collimator ?
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