CBCS SCHEME

USN 2KL16ME023

15ME36B/15MEB306

# Third Semester B.E. Degree Examination, June/July 2018
## Mechanical Measurements and Metrology

Time: 3 hrs. Max. Marks: 80

**Note:** ***Answer any FIVE full questions, choosing one full question from each module.***



### Module-1

1 a. What is Metrology? State the objectives of metrology. **(05 Marks)**
b. Compare Line and End standards. **(05 Marks)**
c. Explain with a sketch, International prototype meter. **(06 Marks)**

**OR**

2 a. With neat sketch, explain wringing phenomena of slip gauge. **(05 Marks)**
b. Explain principle of sine bar. **(05 Marks)**
c. Build a slip gauge combination using M – 112 set for the given dimensions.
i) 49.3115mm ii) 68.208mm. **(06 Marks)**

### Module-2

3 a. Define Limits, Fits and Tolerance. **(06 Marks)**
b. Explain with neat sketch, different types of fits. Give examples each. **(10 Marks)**

**OR**

4 a. Explain Johnson Microkater comparator, with neat sketch. **(08 Marks)**
b. With neat sketch, explain LVDT and state its advantages. **(08 Marks)**

### Module-3

5 a. Explain with neat sketch, the method of measuring minor diameter of external thread and internal thread. **(08 Marks)**
b. Explain with neat sketch, measuring of gear tooth thickness using gear tooth vernier. **(08 Marks)**

**OR**

6 a. Explain Tool maker's microscope, with neat sketch. **(08 Marks)**
b. Explain Construction and working principle of CMM, with neat sketch. **(08 Marks)**

### Module-4

7 a. Give complete classification of errors. **(04 Marks)**
b. Define Accuracy, Precision, Sensitivity and Repeatability. **(08 Marks)**
c. Explain Piezoelectric effect. **(04 Marks)**

**OR**

8 a. Explain Ballast Circuit. **(08 Marks)**
b. With neat sketch, explain Cathode ray Oscilloscope. **(08 Marks)**

### Module-5

9 a. Explain Platform balance, with neat sketch. **(08 Marks)**
b. Describe with neat sketch, McLeod vaccum gauge. **(08 Marks)**

**OR**

10 a. State the laws of Thermocouples. **(05 Marks)**
b. Define Gauge factor. Explain foil type bonded resistance strain gauge. **(07 Marks)**
c. Mention Strain gauge materials and bonding materials. **(04 Marks)**

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