

# CBGS SCHEME

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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) 49.3113mm      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 vacuum 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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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any scribble or marking on the question paper will be treated as a breach of discipline and will be dealt accordingly.