

# CBCS Scheme

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15ME46B

## Fourth Semester B.E. Degree Examination, June/July 2017 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. Explain with a sketch, the international prototype meter. (08 Marks)  
b. Briefly explain: i) Wringing procedure ii) Principle of sine bar. (08 Marks)

OR

- 2 a. Explain the principle of Auto-collimeter with a neat sketch and list advantages of wavelength standards. (08 Marks)  
b. Show the arrangement of minimum angle gauges required to obtain the following angles. (08 Marks)  
i)  $32^{\circ}36'24''$  ii)  $122^{\circ}30'0''$

### Module-2

- 3 a. Define the terms : i) Limits ii) Fits iii) Tolerance. (06 Marks)  
b. Illustrate the following types of gauges (10 Marks)  
i) Snap gauge ii) Ring gauge iii) Plain plug gauge.

OR

- 4 a. Explain with a neat sketch, the working of SOLEX COMPARATOR. (08 Marks)  
b. Differentiate measuring instruments, gauges and comparators. (08 Marks)

### Module-3

- 5 a. With the setup, explain how effective diameter of a screw thread is measured using 3 wire method. (08 Marks)  
b. Describe constant chord method to find tooth thickness. (08 Marks)

OR

- 6 a. List the advantages of Lasers and explain in detail any one laser interferometer. (08 Marks)  
b. Sketch and explain a CMM. What are the various applications of CMM? (08 Marks)

### Module-4

- 7 a. Briefly explain the following terms: (08 Marks)  
i) System response and time delay ii) Accuracy and error iii) Repeatability  
b. What is the necessity of modifying devices? Enlist the advantages of electrical modifying devices. (08 Marks)

OR

- 8 a. Explain with a neat sketch Ballast circuit. (06 Marks)  
b. What are terminating devices? Explain in detail oscillograph. (10 Marks)

### Module-5

- 9 a. Explain the working of Pirani gauge with a neat sketch. (08 Marks)  
b. Explain with neat sketch Analytical Balance to measure unknown faces. (08 Marks)

OR

- 10 a. What is a thermocouple? Explain the Law's of thermocouple. (08 Marks)  
b. Sketch and explain total Radiation pyrometers. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.