

CBCS Scheme

USN

1 S B I S M E O b I

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.
i) $32^{\circ}36'24''$ ii) $122^{\circ}30'0''$ (08 Marks)

Module-2

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

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:
i) System response and time delay ii) Accuracy and error iii) Repeatability (08 Marks)
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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