

# CBCS SCHEME

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15ME46B

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019

## 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 the characteristics of line and end standards. (05 Marks)  
b. With a neat sketch, explain Imperial Standard Yard. (05 Marks)  
c. Four length bars of basic length 100mm are to be calibrated using a calibrated length bar of 400mm, whose actual length is 399.9992mm. It was also found that length of bars B, C, D in comparison to A are + 0.0002, + 0.0004 and - 0.0001mm respectively and the length of all four bars put together in comparison to standard calibrated bar is + 0.0003mm longer. Determine the actual dimensions of all the four end bars. (06 Marks)

OR

- 2 a. Explain with a neat sketch, Wringing phenomenon of slip gauges. (08 Marks)  
b. With a neat sketch, explain the uses of sine bar. (08 Marks)

### Module-2

- 3 a. Explain with a neat sketch, different types of fits. (08 Marks)  
b. Explain briefly Selective assembly and Interchangeability. (08 Marks)

OR

- 4 a. With a neat sketch, explain plug gauges and snap gauges. (10 Marks)  
b. With a neat sketch, describe the construction and working of Jahansson – Mikro Kator. (06 Marks)

### Module-3

- 5 a. Explain the 3 – wire method of finding effective diameter of screw threads. (08 Marks)  
b. With a sketch, define the following terms with respect to a screw thread i) Major diameter ii) Effective diameter iii) Pitch iv) Angle of thread. (08 Marks)

OR

- 6 a. Explain with a neat sketch, Tool Maker's microscope. (08 Marks)  
b. With a neat sketch, explain laser interferometer. (08 Marks)

### Module-4

- 7 a. Briefly explain the generalized measurement system, with block diagram. (08 Marks)  
b. List and explain the different types of errors. (08 Marks)

OR

- 8 a. Explain the inherent problems present in mechanical modifying system. (08 Marks)  
b. Explain the working of "Cathode Ray Oscilloscope". (08 Marks)

### Module-5

- 9 a. Explain briefly i) Proving ring ii) Prony brake dynamometer. (08 Marks)  
b. Explain with neat sketch, the working of Bridgemann gauge. (08 Marks)

OR

- 10 a. Explain the wheat stone bridge arrangement for strain measurement. (08 Marks)  
b. What is Thermocouple? State and explain the laws of thermo couple. (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.