

## CBCS SCHEME



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**Fourth Semester B.E. Degree Examination, June/July 2019**  
**Mechanical Measurements and Metrology**

17MA46

Time: 3 hrs.

Max. Marks: 100

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

**Module-1**

- 1 a. Differentiate line standard and end standard. (06 Marks)  
 b. Define the following : i) Accuracy ii) Precision. (04 Marks)  
 c. Explain with neat sketches : i) imperial standard ii) international prototype meter. (10 Marks)

OR

- 2 a. Using M112 set of slip gauge, build the dimension 35.4875mm. (06 Marks)  
 b. Explain working principle of auto collimator. (06 Marks)  
 c. Explain working principle of sine bar. (08 Marks)

**Module-2**

- 3 a. Define and sketch the following : i) Clearance fit ii) Interference fit. (04 Marks)  
 b. Explain the following : i) Selective Assembly ii) Interchangeability. (08 Marks)  
 c. Differentiate Hole basis system and shaft basis system with sketches. (08 Marks)

OR

- 4 a. State and explain Taylor's principle of gauge design. (04 Marks)  
 b. Explain with a neat sketch construction and working of a plain plug gauge. (08 Marks)  
 c. Explain with a neat sketch, the working a shape gauge. (08 Marks)

**Module-3**

- 5 a. Explain the following related to screw thread : i) Major diameter ii) Minor diameter. (04 Marks)  
 b. Derive an expression for measuring effective diameter of thread using 2-wire method. (08 Marks)  
 c. Sketch and explain Gear roll tester for composite errors. (08 Marks)

OR

- 6 a. Explain the following : i) run out ii) concentricity. (06 Marks)  
 b. Construct and brief the working of a laser interferometer. (06 Marks)  
 c. Sketch and explain coordinate system in coordinate measuring machine. (08 Marks)

**Module-4**

- 7 a. Explain with the help of block diagram, generalized measurement system. (08 Marks)  
 b. Sketch and explain electronic transducer. (06 Marks)  
 c. Define the following related to measurement with graph.  
 i) Hysteresis ii) Repeatability iii) Sensitivity. (06 Marks)

1 of 2

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.

OR

- 8 a. Explain the following : i) Input circuitry ii) Ballast circuit. (10 Marks)  
b. Explain the working principle of CRO with block diagram. (10 Marks)

**Module-5**

- 9 a. Explain with neat diagram, the wooden block prony brake dynamometer. (10 Marks)  
b. Describe with a neat sketch McLeod vacuum gauge. (10 Marks)

OR

- 10 a. State and explain laws of thermocouple. (06 Marks)  
b. Explain the working of pirani gauge with neat sketch. (06 Marks)  
c. Explain with the help of neat diagram, the working principle of optical pyrometer. (08 Marks)

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