

# CBCS Scheme

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15ME36B

## Third Semester B.E. Degree Examination, June/July 2017 Mechanical Measurements and Metrology

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Brief the need of Inspection. (04 Marks)  
b. What are the principles of measurements? (04 Marks)  
c. Explain the process of measurement. (04 Marks)  
d. What are the causes of Errors in measurements? (04 Marks)

OR

- 2 a. Explain the wavelength standard of measurements. (04 Marks)  
b. What care should be taken in use of slip gauges? (04 Marks)  
c. What is Sine bar? Explain the principle of sine bar. (04 Marks)  
d. With a sketch, explain the principle of auto collimator. (04 Marks)

### Module-2

- 3 a. Explain the types of fits. (04 Marks)  
b. What is Hole basis and Shaft basis system? (04 Marks)  
c. Define the Interchangeability and Selective Assembly. (04 Marks)  
d. Explain the compound tolerance, with a suitable example. (04 Marks)

OR

- 4 a. What are the materials used in gauge manufacturing? (04 Marks)  
b. List the functional requirements of a comparator. (04 Marks)  
c. With a neat sketch, explain the optical comparator. (08 Marks)

### Module-3

- 5 a. How do you measure the minor diameter of Internal threads? (04 Marks)  
b. What is "Best Size wire"? Derive the best wire size in terms of pitch and flank angle. (08 Marks)  
c. With a sketch, show the terminology of a spur gear. (04 Marks)

OR

- 6 a. With a neat sketch, explain the gear roll tester for composite error measurement. (08 Marks)  
b. Explain the basic concept of coordinating measuring machine. (08 Marks)

### Module-4

- 7 a. What is the significance of measurements? (04 Marks)  
b. Explain in detail, the Generalized Measuring System. (08 Marks)  
c. What is Transfer Efficiency? (04 Marks)

OR

- 8 a. What is Ballast Circuit? (04 Mark)  
b. With a neat sketch, explain the Cathode Ray Oscilloscope. (08 Mark)  
c. What are the advantages of Electrical intermediate modifying devices? (04 Mark)

**Module-5**

- 9 a. With a neat sketch, explain the Hydraulic dynamometer. (08 Mark)  
b. Sketch and explain the working of an Pirani gauge. (08 Mark)

**OR**

- 10 a. List the strain gauge material and bonding material. (04 Mark)  
b. Write a note on Mounting of Strain gauge. (04 Mark)  
c. With a neat sketch, explain the Optical pyrometer. (08 Mark)

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