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**B.E. (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2012**

Materials Science and Engineering / Third Semester

**ME 9306 – METROLOGY AND MEASUREMENTS**

(Regulation 2008 )

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. Differentiate between precision and accuracy.
2. List the various sources of errors in measurements.
3. Name the common linear measuring instruments and sketch any one.
4. What are the common angular measuring instruments and describe any one?
5. What are lasers? List the advantages of lasers.
6. What is a CMM? How is it used?
7. Differentiate between straightness and flatness measurements.
8. What is roundness and how is it measured? Explain.
9. Write a note on the pitot tube.
10. What is the function of the bimetallic strip?

**PART – B (5 x 16 = 80 marks)**

11. Write a note on the errors likely to creep in precision measurements.
12. a) List the types of linear measuring instruments. How are they classified? Write a note on the beam comparator. Illustrate your answer with a neat sketch.

**OR**

12. b) With a neat sketch explain the working of a clinometer.

13. a) With a neat sketch explain the working of the NPL flatness interferometer.

**OR**

13. b) With a neat sketch explain the constructional features of a CMM and give the details of how it is used.

14. a) With neat sketches explain how thread measurement and gear measurement is done.

**OR**

14. b) With neat sketches explain how surface finish is measured.

15. a) Write a note on the venturimeter and its uses.

**OR**

15. b) What are thermocouples? Where are they used?