

B.E/B.Tech (Part-Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY2013.
MATERIALS SCIENCE AND ENGINEERING BRANCH
THIRD SEMSTER-REGULATION 2008

ME9306 – METROLOGY AND MEASUREMENTS

Time: 3Hr

Max.Mark:100

Answer All the Questions

Part –A (10x2=20 Marks)

20

1. Define the term Metrology as applied to Engineering Industry.
2. State some of the characteristics of Random Error.
3. Mention the uses of straight gauge.
4. What do you mean by Selective Assembly?
5. Mention some of the limitations of laser interferometer.
6. Write short notes Laser probe used in a CMM.
7. What do you mean by drunken thread?
8. Name the various types of errors in gears.
9. State the importance of Calibration.
10. What do you mean by Readability of a measuring instrument?

Part – B (5x16 = 80 Marks)

11. Explain the effect of the following on precision measurement:
(i)poor contact(ii)alignment (iii) contact pressure (iv) temperature on precision measurement.
- 12a. What are the essential considerations in selecting the material for gauges? List some of the materials commonly used in the manufacture of gauges and explain the manufacture of gauges.
(OR)
- 12b. Explain with neat sketch the principle and construction of an Alignment telescope.
- 13a. With help of a neat diagram explain the working of an A.C.Laser interferometer. State its significance in Machine Tool industries.
(OR)
- 13b. With the help of a neat block diagram explain the function of the basic elements used in a Machine Vision system. How Machine vision system could be used for measuring the dimension of a component?
- 14a. Define Flatness. Describe any one method of testing the flatness of a surface ;state its advantages and limitations.
(OR)
- 14b. Name the various methods of measuring out of roundness of a cylindrical

part. Describe the procedure for plotting the polar graph.

- 15a Describe in brief:
(i) Electromagnetic flow meter
(ii) Ultrasonic flow meter

(OR)

- 15b Describe with neat sketches
(i) Radiation Pyrometer
(ii) Optical Pyrometer