Code No. 6184 / O

FACULTY OF ENGINEERING

B. E. 4/4 (Mech. / Prod.) I – Semester **(Old)** Examination, July 2010

Subject : **Metrology and Instrumentation**

Time : 3 Hours} {Max. Marks: 75

Note: Answer **all** questions of Part - A and answer any **five** questions from Part-B.

PART – A (25 Marks)

1. Compare line standards and end standard.
2. Explain the use of sine bars for measurement of angler.
3. What are the advantages of optical instruments over conventional measuring instruments?
4. What are the necessary conditions for interference of light waves ?
5. List the main classes of fit in screw threads and tolerance class.
6. Name and sketch three main types of fits.
7. Explain Hystersis and resolution.
8. Explain Grid technique in strain measurement.
9. What are the disadvantages of ionizations gauges.
10. Compare resistance thermometer and thermocouple.

PART – B (5x10=50 Marks)

11.(a) Explain the method of calibration of slip gauges.
(b) A 100mm sin bar is used to set up an angle 32.5°.
Determine the slip gauges needed. Estimate the error inter angle if
(i) Distance between rollers is not connected by ± 0.01mm.
(ii) If distances of rollers in out by ± 0.005 mm.

12.(a) Describe a method to find out the flatness of a surface plate.
(b) Discuss method for testing for straightness by using spirit level.

13.(a) Explain Taylor Habson Talysurf to measure surface roughness parameters.
(b) Make list of ISI symbols of surface finish for various processes.

14. Derive an expression for best wire size in thread measurement. Show by mean of a sketch what is best wire .

15.(a) Explain different types of errors in measuring instruments.
(b) Explain foil type resistance strain gauge.

16.(a) Explain micro manometer with neat sketch.
(b) Explain different types of materials used in thermocouples.

17. Write short notes on the following :
(a) Seismic Instrument (b) Rosette gauge