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Reg. No. : .....

Name : .....

Sixth Semester B.Tech. Degree Examination, March 2015
(2008 Scheme)
08.601 : METROLOGY AND INSTRUMENTATION (MP)
(Special Supplementary)

Time : 3 Hours Max. Marks : 100

Instructions : *i) Answer **all** questions in Part – **A**.*

*ii) Answer **any one full** question from **each** Module in Part – **B**.*

PART – A

1. What are the fundamental methods of measurement ? Explain.
2. Explain briefly on material standard.
3. Explain the principle of working of interferometers.
4. How an electrical comparator works ?
5. What is CCD ? Explain.
6. What is Talysurf ? Explain.
7. What is resistance strain gauge ?
8. Explain the measurement of the major elements of a gear.
9. How a piezoelectric transducer works ?
10. What is linearity ? Explain briefly. **(10×4=40 Marks)**

PART – B

Module – I

11. a) Derive an expression for the sensitivity of a spirit level.

    b) Describe the principle of an optical dividing head and explain its use.

P.T.O.

12. a) Differentiate between precision and accuracy of an instrument.

    b) Explain the principle, requirements, limitations and uses of sine bars.

Module – II

13. a) With a neat sketch explain the mechanism of a sigma comparator.

    b) With reference to surface texture, explain the following terms :

    i) Roughness ii) Waviness

    iii) Lay iv) RMS value

14. a) Explain the working principle of an autocollimator and mention its uses.

    b) What are the different methods used for the measurement of surface finish ? Explain the working of the Tomlinson surface meter.

Module – III

15. a) What are piezoelectric transducers ? Explain any two instruments working on this principle.

    b) Explain how strain gauges can be used for the measurement of torque in rotating shafts.

16. a) Describe the working of an inductance type transducer. List the advantages and uses of this type.

    b) Discuss the characteristics of normal error distribution. Distinguish between absolute error and relative error.

(3×20=60 Marks)