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Reg. No. : .....

Name : .....

Sixth Semester B.Tech. Degree Examination, June 2017
(2013 Scheme)
13.601 : METROLOGY AND INSTRUMENTATION (MP)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions; **each** carries **2** marks.

1. List out the various accessories of slip gauge.
2. Define the term 'Reproducibility'.
3. State the essential considerations in selection of material for gauges.
4. Define clearly the following terms : Tolerance and Basic size.
5. Differentiate Basic and Nominal size.
6. Define the terms : 'Roughness factor' and 'Shape factor' relating to surface roughness measurement.
7. What are the various possible sources of error in the use of ACLI ?
8. State the precautions to be followed in using optical flats.
9. List out some of the advantages of CMM.
10. Why the dummy gage is necessary in strain resistance type gauges ?

PART – B

Answer **any one** full question from **each** Module ; **each** carries **20** marks.

Module – I

11. a) Describe the various parts and working principles of Mechanical Bevel Protractor with neat sketch.

    b) Enumerate the advantages of using wavelength standard as basic unit to define primary standards.

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12. a) Explain the various applications of sine tables with suitable sketches.

    b) Explain the phenomenon of mechanical lapping of slip gauges.

Module – II

13. a) Draw the symbol and define the geometric characteristic for the following :
        i) Flatness
        ii) Straightness
        iii) Circularity
        iv) Cylindricity and mark on the simple mechanical component.
    b) i) State the need for limit gauging.
        ii) Briefly discuss about the three basic types of limit gauges and limitation of gauging.

14. a) Write brief notes on the following :
        i) Gauging force
        ii) Gauge tolerance.

    b) State the purpose of plain cylindrical plug gauges with neat sketches, list out its designs.

Module – III

15. a) Explain the construction and working of Johnson Mikrokator with neat sketches.

    b) Briefly describe the working of Tomison surface meter with suitable sketch.

16. a) Describe the working principle of Autocollimator with neat diagram.

    b) Explain briefly about the Flow Velocity Pneumatic Comparator. Point out its specialities.

Module – IV

17. a) Explain the various types of CMM with suitable sketches.

    b) Write a short note on Piezoelectric transducers.

18. a) Explain the working of resistance type strain gauge with temperature compensator.

    b) Compare systematic and random errors.