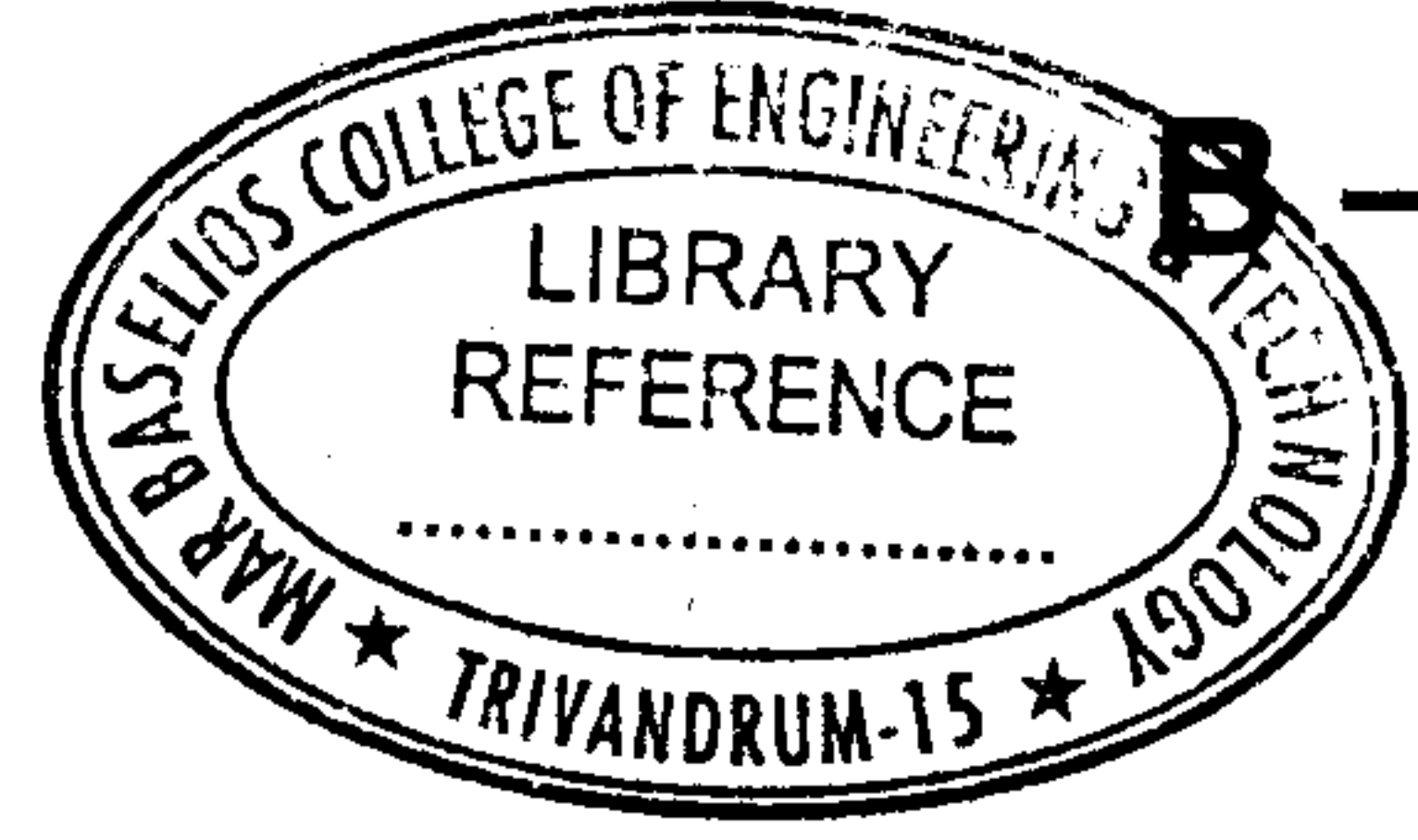




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Reg. No. :

Name :

**Sixth Semester B.Tech. Degree Examination, April 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. Illustrate 3 wire method of measuring diameter of threads.
2. What is best wire size ?
3. Describe back lash error.
4. Write a note on null balance method.
5. List the instrument used for high pressure measurement.
6. Describe the resistance thermometer.
7. State the uses of radiation pyrometer.
8. List any three disadvantages of material standards.
9. What is interchangeability ?
10. What are the types of comparators ?

PART – B

(Answer **one full** question from **each** Module, **each** carries **20** marks.)

Module – I

11. a) Describe the standard procedure of calibrating measuring instruments.
b) Explain the principle, requirement, limitations and uses of Clinometer.

P.T.O.



12. a) Can you give the reasons for error in sine bar ?
- b) What are standards of measurements ? Explain the classification of linear standards.
- c) List and explain the different classes of fits as per BIS.

Module – II

13. a) Derive an expression for sensitivity of equal arm balance.
- b) Describe the various methods for checking flatness of machined surfaces.
14. a) A shaft of 12 ± 0.004 mm is to be checked by means of GO and NOGO gauges. Gauge maker's tolerance is 10% of work tolerance. Design the dimensions of the gauge required.
- b) Define fits and explain in brief the types of fits.

Module – III

15. a) Elaborate on the different types of roughness measuring instruments.
- b) With a neat sketch, explain the principle and working of autocollimator.
16. a) Discuss the working of AC laser interferometer.
- b) Explain the working of optical strain gauge.

Module – IV

17. a) Mention the advantages and disadvantages of CMM.
 - b) Define absolute pressure and gauge pressure. List the various pressure units used in practice.
 18. a) Describe the construction and working of electrical dynamometers.
 - b) With a neat sketch, explain drill tool dynamometer.
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