



Reg. No. : .....

Name : .....

**Sixth Semester B.Tech. Degree Examination, April 2014**  
**(2008 Scheme)**  
**08.601 : METROLOGY AND INSTRUMENTATION (MP)**

Time : 3 Hours



Max. Marks : 100

**PART - A**

Answer **all** questions. **Each** question carries **4** marks. **(10×4= 40 Marks)**

1. Distinguish between sensitivity and accuracy.
2. Write notes on limit gauges.
3. How are fits classified ? Give suitable example.
4. Explain the working principle of an autocollimator. What are its uses ?
5. With a neat sketch explain the basic elements in a vision system.
6. Differentiate between roughness and waviness.
7. What is an optical flat ? Where is it used ?
8. How does a piezoelectric transducer work ?
9. Briefly explain working of a mechanical strain gauge.
10. Explain the basic principle of a capacitance type transducer.

**PART - B**

Answer **one** full question from **each** Module. **(3×20= 60 Marks)**

**Module - I**

11. a) Explain the principle, requirements and limitations of a sine bar.  
b) Sketch a bevel protractor and explain its working. Show how acute angles can be measured with it.

OR



12. a) Describe the use of an optical diving head.
- b) Why is it necessary to give a tolerance on an engineering dimension ? What are the types of tolerances ? Give examples.

### Module – II

13. a) What is a comparator ? Classify the different types of comparators. Describe the advantages and disadvantages of each type.
- b) With the help of a block diagram explain the working of Taylor-Hobson Talysurf.

OR

14. a) Sketch and explain the working principle of a Tool Maker's Microscope.
- b) What do you understand by surface texture ? How it is indicated on a drawing ?

### Module – III

15. a) Derive an expression for gauge factor of a resistance strain gauge. Explain the significance of gauge factor in strain measurement.
- b) With the help of neat diagrams explain the working of any two types of dynamometers.

OR

16. a) Differentiate between static and dynamic measurement. Explain the static characteristics of a measuring system.
- b) Explain the working of an optical strain gauge.