Printed Pages : 2

EME-403

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3991

Roll No. | | | | | | | | | | |

B.Tech.

(SEMESTER-IV) THEORY EXAMINATION, 2011-12

MEASUREMENT & METROLOGY

Time : 3 Hours]

[Total Marks : 100

Note : Attempt **all** Sections.

Section – A

1. Answer **all** the questions in **50 – 75** words. Each question carries **2** marks.
   (a) Define measurement and explain applications of measurement.
   (b) Explain the functions of a sensor in a measurement system.
   (c) Differentiate between gauge pressure and static pressure.
   (d) Differentiate between thermocouple and thermistor.
   (e) Explain different types of seismic instruments.
   (f) Explain the purpose of a surface plate in metrology.
   (g) Explain different types of fits.
   (h) Define and list out various types of comparators.
   (i) Differentiate between primary and secondary texture.
   (j) Explain the importance of measurement and inspection in the field of metrology.

Section – B

2. Answer any **three** questions. Each question carries **10** marks.
   (a) Classify different types of errors and explain how these errors can be removed or rectified in an instrument.
   (b) Explain the working of a bimetallic thermometer with a neat sketch.
   (c) Differentiate between uni-lateral and bi-lateral tolerances. Why is unilateral tolerance preferred over bilateral tolerance ?
   (d) Define optical flat and explain its uses in detail.
   (e) Define straightness, flatness and roundness and also explain how autocollimator is useful in finding these parameters.

Section – C

Answer **all** the questions. Each question carries **10** marks.

3. Classify transducers and explain capacitive and piezo-electric transducer with neat sketches.

OR

Explain in detail the generalized measurement system and its functional elements with a block diagram.

4. Explain the McLeod pressure gauge with neat sketches.

OR

Classify different types of resistance gauges and explain the working of Wheatstone bridge under balanced and unbalanced conditions.

5. Differentiate between Hole basis and Shaft basis system with neat diagrams.

OR

Explain how sine bar is used for measuring the angle of a taper plug gauge with neat diagram.

6. Define interferometry. Explain the working principle and applications of Tool Makers's microscope with a neat diagram.

OR

Differentiate between Roughness and Waviness. Explain different numerical assessment methods to find surface roughness.

7. Explain the importance of thread micrometer and explain how screw thread is measured by using two wire and three wire method.

OR

Explain working of a Stroboscope with a neat diagram.
