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

PAPER ID : 140404 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. IV) THEORY EXAMINATION 2013-14

MEASUREMENT AND METROLOGY

Time : 2 Hours *Total Marks : 50*

Note :– (i) **All** questions are compulsory.

(ii) Be precise in your answer.

1. Attempt any **four** parts of the following : **(3.5×4=14)**

(a) What is the significance of measurement ? How are standards of measurement classified ?

(b) Draw a block diagram representation of a generalised measurement system. Identify various elements and explain their functions.

(c) What are the different standards inputs for studying the dynamic response of a system ? Explain them briefly.

(d) Explain briefly with diagrams important transducer actuating mechanisms.

(e) Elaborate the difference between a display unit and a recorder.

(f) Explain briefly A.C. and D.C. signal conditioning system.

2. Attempt any **four** parts of the following : **(3×4=12)**

(a) Why are Electrical tachometers preferred to Mechanical tachometers ?

(b) Explain how capacitive type of transducers can be used for pressure measurement.

(c) Explain briefly, the mechanical strain gauge.

(d) What are the various methods of vibration measurement.

(e) Explain the principle of working of a Piezo-electric load cell.

(f) Explain briefly the working of a radiation pyrometer.

3. Attempt any **two** parts of the following : **(6×2=12)**

(a) Discuss 'Metrology' as a means of achieving quality control. Give the relative characteristics of line and end standards.

(b) How do you classify fits ? Explain briefly basis of Fit or Limit system. What is 'Taylor's Principle' ? Explain.

(c) What are the systems of specifying tolerances; which system is used the most and why ? How are holes; shafts and fits designated ?

4. Attempt any **two** parts of the following : **(6×2=12)**

(a) What is a Sine bar ? Name the material used for making a Sine bar. Explain with the help of a diagram the principle of a Sine bar.

(b) What is a comparator ? What are the essential parts of comparators ? Give uses of comparators.

(c) (i) Explain how the pitch of a screw thread can be measured on a pitch measuring machine.

(ii) Differentiate between first, second, third and fourth order irregularities.