

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – SUMMER 2013****Subject Code: 141901****Date: 12-06-2013****Subject Name: Mechanical Measurement and Metrology****Time: 10:30am – 01:00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Draw a block diagram of a generalized measurement system (GMS) and explain the various elements of it in detail. **07**
- (b)** Explain the following giving suitable examples: **07**
- (i) Range and span (ii) Accuracy and precision
(iii) Threshold and resolution (iv) Calibration
- Q.2 (a)** List and explain the different terms related to screw. Explain the difference between two wire and three wire method used for screw thread measurement. **07**
- (b)** Explain the construction and working of gear tooth vernier caliper. How will you measure gear tooth thickness with this instrument? **07**
- OR**
- (b)** Explain the construction and working of standard gear tester with neat sketch. **07**
- Q.3 (a)** (i) It is not prefer to use sinebar for measuring angle more than 45° . Why? **07**
(ii) Explain the different surface roughness evaluation methods.
- (b)** Explain the construction and working of vernier height gauge with neat sketch. **07**
- OR**
- Q.3 (a)** Explain the construction and working of the following with neat sketch : **07**
(i) Telescopic gauge (ii) Universal bevel protractor .
- (b)** Explain the construction and working of Telesurf surface roughness measuring instrument with neat sketch.. **07**
- Q.4 (a)** Explain the construction and working of bourdon tube pressure gauge (along with tube materials) with neat sketch. **07**
- (b)** (i) Explain the flash light stroboscope. **07**
(ii) Explain the diaphragm gauges in brief.
- OR**
- Q.4 (a)** Explain the construction and working of Mcleod gauge with neat sketch. **07**
- (b)** (i) Explain the proving ring in brief. **07**
(ii) Explain the difference between a bellow gauge and a diaphragm gauge.
- Q.5 (a)** (i) Explain the bimetallic thermometer in detail. **07**
- (b)** (i) Explain the importance of alignment tests for machine tools. Briefly explain the alignment tests for machine tool (any ONE). **07**
- OR**
- Q.5 (a)** (i) Write a short note on: International temperature scale (ITS). **04**
(ii) Explain flatness measurement in brief. **03**
- (b)** (i) Explain the thermoelectric pyrometer in detail. **07**
