

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER 2013****Subject Code: 170204****Date: 28-11-2013****Subject Name: Automobile Mechanical Measurements****Time: 10:30 TO 01:00****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) State necessity and objectives of metrology. Also explain in brief precision and accuracy. **07**

(b) Differentiate between unilateral and bilateral tolerances. Explain the following fits with neat sketch: **07**

1) Clearance Fit 2) Interference Fit 3) Transition Fit.

Q.2 (a) Describe with sketch the construction and working of a micrometer. Explain how readings are taken. **07**

(b) Enlist methods of measurements. Explain Slip gauges with wringing process. **07**

OR

(b) Name the different types of the Comparators and explain Sigma Comparators with neat sketch. **07**

Q.3 (a) Describe with sketch the construction and working of a Optical bevel protractor. Explain how readings are taken. **07**

(b) Explain various forms of Gear teeth and explain Gear tooth vernier caliper with neat sketch. **07**

OR

Q.3 (a) Explain the following methods of evaluating surface finish: **07**

- 1) Peak to valley height method
- 2) The average roughness
- 3) Forms factor and bearing curve.

(b) Give the classification of threads. Explain the two-wire method of measuring the effective diameter of a screw thread. **07**

Q.4 (a) Explain Gas filled thermometer and Vapour pressure thermometer. **07**

(b) Describe with sketch the construction and working of a RTD. Give advantage and disadvantage of RTD. **07**

OR

Q.4 (a) Sketch and describe the construction and working of Bellows pressure gauge. And Give the classification of instruments for pressure measurement. **07**

(b) Explain the construction and working of LVDT with its advantage and disadvantages. **07**

Q.5 (a) List the different types of Mechanical tachometer and explain any one of them. **07**

(b) Enlist various types of errors and compare Repeatability and reproducibility. **07**

OR

Q.5 (a) Sketch and describe the construction and working of Rotameter. **07**

(b) Explain Seismic and Strain gauge accelerometer. **07**
