

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- IV EXAMINATION – SUMMER 2020****Subject Code: 2141901****Date: 27/10/2020****Subject Name: MECHANICAL MEASUREMENT & METROLOGY****Time: 10:30 AM TO 01:00 PM****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) What is measurement error? Classify errors and explain any one in short. **03**
 (b) Explain the working principal of Pneumatic comparators with a neat sketch. **04**
 (c) Describe construction, working principle and applications of Vernier height gauge. **07**

- Q.2** (a) Briefly explain the procedure of finding least count of a Vernier Caliper. **03**
 (b) Explain the term Calibration with suitable example. **04**
 (c) Classify torque and power measurement techniques. Explain torsion bar dynamometer. **07**

OR

- (c) State the various types of load cells and explain any one of them with neat sketch. **07**
- Q.3** (a) Explain the terms Resolution and Threshold with a suitable example. **03**
 (b) Explain hemispherical bore gauge with applications. **04**
 (c) Explain Tool Maker's Microscope with a neat sketch. **07**

OR

- Q.3** (a) Explain working of Liquid in glass Thermometer with a neat sketch. **03**
 (b) Explain Radiation Pyrometer. **04**
 (c) Compare RTD and thermistors as temperature measuring device. **07**
- Q.4** (a) Explain adverse effects of poor surface finish. **03**
 (b) Briefly explain working of rotameter as flow measuring device with a neat sketch. **04**
 (c) Explain working of Mcleod gauge for pressure measurement. **07**

OR

- Q.4** (a) Explain Indirect Method of measurement. **03**
 (b) Why sine bar is not preferred for angles greater than 45°? Explain. **04**
 (c) Distinguish between Primary, Secondary, Tertiary and working standards of length. **07**
- Q.5** (a) Give classification of threads. **03**
 (b) List out various elements to be checked for accuracy of gear and describe any two. **04**
 (c) Explain Two wire method for measuring effective diameter of thread with a neat sketch. **07**

OR

- Q.5** (a) Explain root mean square value used for surface roughness measurement. **03**
 (b) Explain wringing process of slip gauges. **04**
 (c) Give classification of comparators and explain Dial indicator with sketch **07**
