

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018****Subject Code:2142503****Date:22/11/2018****Subject Name:Metrology and Measurement****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

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

| | | MARKS |
|------------|---|--------------|
| Q.1 | (a) What is metrology? Discuss need of inspection. | 03 |
| | (b) Give the different between systematic error and random error. | 04 |
| | (c) Define measurement. Explain various modes of measurement with relevant example of each. | 07 |
| Q.2 | (a) Classify the torque and power measurement instruments. | 03 |
| | (b) Write the process of find the least count of any measuring instruments. | 04 |
| | (c) What is the Load Cell? State various types of load cells and their use. Explain any one of them with neat sketch. | 07 |
| OR | | |
| | (c) What is the absorption dynamometer? Explain any one of them with neat sketch. | 07 |
| Q.3 | (a) Write down the errors in vernier caliper. | 03 |
| | (b) Explain micrometer clinometers with figure. | 04 |
| | (c) Describe the construction, working principle and application of vernier height gauge. | 07 |
| OR | | |
| Q.3 | (a) Write the application and limitation of angle gauges. | 03 |
| | (b) Write down the short note no slip gauge. | 04 |
| | (c) Explain the construction and working of vernier bevel protractor with neat sketch. | 07 |
| Q.4 | (a) State and explain different temperature scales. | 03 |
| | (b) Write short note on Johansson Mikrokater comparator. | 04 |
| | (c) What is the pyrometry? Enlist the different types of pyrometer. Explain any one of them with neat sketch. | 07 |
| OR | | |
| Q.4 | (a) Explain working principle of bimetallic strip thermometer | 03 |
| | (b) Describe the optical flat. | 04 |
| | (c) Explain working principle and construction of RTD with require sketch. | 07 |
| Q.5 | (a) Define the following elements of surface texture: (1) Cut- off length, (2) Flaws, (3) Lay. | 03 |
| | (b) Give the classification of comparators. | 04 |
| | (c) Sketch and working of Tomilson surface roughness tester. | 07 |

OR

- Q.5** (a) Define the following terms **03**
(1) Pressure angle, (2) Root circle, (3) Diametral Pitch
- (b) Explain Parkinson tester with neat sketch. **04**
- (c) What is effective diameter of thread? Describe with sketch measurement of effective diameter by Two wire method. **07**
