

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME- SEMESTER II- EXAMINATION – SUMMER 2015**

**Subject Code: 2721007**

**Date: 01/06/2015**

**Subject Name: Law Temperature Measurement and Instrumentation**

**Time: 2:30 PM – 5:00 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) Explain static and dynamic characteristics of instruments? Discuss in detail. 07  
(b) State the difference between 07  
(i) Accuracy and Precision  
(ii) Span and Range  
(iii) Dead zone and Dead time

- Q.2 (a) List down the various methods of cryogenic fluid flow measurement. Explain in 07  
detail about Ultrasonic Flow meter.  
(b) Explain the working principle of orifice and venturi flow meter and state the 07  
applications of the same.

**OR**

- (b) List down the types of Errors that can occur during measurement. Discuss in 07  
detail about Systematic errors in measurement.

- Q.3 (a) Explain the  $^3\text{He}$  Melting curve thermometer with neat sketch. Also state merits 07  
and demerits of the same  
(b) Discuss in detail about Vapour Pressure thermometers. Also Discuss the 07  
equation of sensitivity for this thermometer.

**OR**

- Q.3 (a) Classify the different types of transducers and explain the working of LVDT with 07  
neat sketch stating clearly merits and demerits.  
(b) Discuss in detail with neat sketch about density measurement technique using 07  
radiation.

- Q.4 (a) List down the techniques for vacuum measurements. Discuss in detail about Mc 07  
Leod gauge for vacuum measurements.  
(b) List down the Types of Strain gauges: Explain in detail about Bonded wire 07  
strain gauge.

**OR**

- Q.4 (a) Short note on fibre optics sensors. 07  
(b) Enlist various techniques for sound measurement. Explain how the sound is 07  
measured with microphones.

Q.5 (a) What do you mean by Non-destructive testing? Discuss the concept in brief. 07  
Classify all the types of Non-destructive testing in brief.

(b) Define the following: 1. Noise and Signal 2. Phase Noise and Amplitude Noise 07  
3. Reproducibility

OR

Q.5 (a) Discuss in detail with neat sketch about the concept thermometry for low 07  
temperature. Classify all the technique in brief.

(b) Discuss in detail about Radiography technique for Non-destructive Testing. 07

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