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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION - SUMMER 2016

Subject Code:170904 Date: 18/05/2016 **Subject Name: Industrial Instrumentation** 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. 07 **O.1** (a) Describe the construction and working principle of electromagnetic type flow meter with it's merits and demerits. **(b)** What is Hall effect? Describe the working principle, construction and application of Hall 07 effect transducer Q.2 (a) Explain working principle of Rotameter for flow measurement. 07 Explain construction and working principle of RVDT. Also mension its applications. **(b)** OR 07 Write Short Note on X-Y Type Recorder. **(b)** O.3 (a) Explain Black Body concepts for very high temperature measurements. Describe with neat 07 diagram how disappearing filament type optical pyrometer can measure very high temperature. Mention it's merit and demerits. Explain construction and working principle of LVDT and explain how the magnitude and **(b)** 07 direction of the displacement of core of LVDT can be detected? Describe dynamic characteristics of piezo electric transducer. Obtain the relationship of O.3 (a) 07 piezo electric transducer output voltage and voltage sensitivity, pressure and thickness of crystal. Explain working of Ultrasonic flow meter. 07 **(b)** O.4 (a) Explain Resistance Temperature Detector (R.T.D.) with its merits and demerits. 07 Describe pirani gauge used for vacuum pressure measurement. **(b)** 07 Explain McLeod Gauge for Pressure Measurement With Necessary Diagram. 07 O.4 (a) Describe the schematic of strip chart recorder and describe it's working and construction **(b)** 07 of each components. Compare with circular chart recorder. Describe application of Thermister for temperature measurements. Q.5 (a) 07 **(b)** What is load cell? Explain Proving ring and Hydraulic load cell. 07 Differentiate Unbonded and bonded type strain gauge. How is the temperature Q.5 (a) 07

compensation carried out using strain gauge in a bridge circuit?

(b)

Explain how temperature compensation is achieved in strain measuring system.

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