Seat No.:	Enrolment No.

Subject Code:X70903

Subject Name: INDUSTRIAL INSTRUMENTATION

GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER-VII EXAMINATION – WINTER 2015

Date: 04/12/2015

Time: 10:30pm to 1:00pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** Enlist Static & Dynamic Characteristic of Equipments, Explains any three with **07** suitable example. What are the difference between Sensors and Transducers Give basic **(b) 07** classifications of Transducers? **Q.2** 07 Describe the theory of operation of resistive strain gauge. (a) **(b)** Explain Various Factors For the selection of Displacement transducer 07 OR How L.V.D.T is used for measuring displacement? what are the limitations of **(b)** 07 L.V.D.T. 07 **Q.3** What is load cell? Give various application of load cell. (a) Draw the equivalent circuit of a Piezo electric transducer and hence deduce that **(b) 07** output is zero when pressure is static. State advantages and disadvantages of Piezoelectric transducer OR **Q.3** (a) Derive an Expression of Gauge Factor for a wire wound resistance strain gauge. **07** Enlist the various methods of measurement of torque 07 **(b)** 0.4 (a) Draw the equivalent circuit of a Piezo electric transducer and hence deduce that 07 output is zero when pressure is static .State advantages and disadvantages of Piezoelectric transducer. Explain working principle of ultra sonic flow meter with suitable diagram 07 **(b)** OR **Q.4** (a) Explain with suitable assumption, In Petroleum plant, which place you require **07** to measure liquid level, what are the methods available for liquid level measurement. Give comparisons of Thermocouple, Thermister and RTD. **07 (b) Q.5** Where X-Y Chart recorder is prefer explain its working with diagram 07 (a) Explain Significance of Digital Recorder. **07 (b)** With Ref. to Thermal Power plant which kind of measurements required for **Q.5** 07 (a) various process of Power generation and for that which Sensors or Transducers used (Give minimum 7 processes). **(b)** What is "SCADA" –explain its necessity in modern power plant 07 ******