

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER-VII (NEW SYLLABUS) EXAMINATION- SUMMER - 2018

Subject Code: 2170913

Date: 28/04/2018

Subject Name: Industrial Instrumentation (Department Elective-II)

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) Differentiate between un bonded and bonded type strain gauge.	03
	(b) Explain how the temperature compensation is carried out using strain gauge in a bridge circuit.	04
	(c) What is electrical transducer? Explain advantages of electrical transducer.	07
Q.2	(a) Define (i) Absolute Pressure (ii) Gauge Pressure (iii) Differential Pressure.	03
	(b) Explain how the pressure can be measured by inductive transducer.	04
	(c) Explain construction and working principle of LVDT. Explain how it will detect displacement.	07
	OR	
	(c) Describe the working principle of strain gauge. State its applications. Derive formula for gauge factor.	07
Q.3	(a) List different types of thermocouples used for temperature measurement. Explain thermoelectric laws used for temperature measurement.	03
	(b) Explain how cold junction compensation is done in thermocouple.	04
	(c) Enlist various characteristics of transducer. Define any five of them.	07
	OR	
Q.3	(a) State principle of operation and construction of RTD .	03
	(b) Explain Muller Bridge configuration for the temperature measurement using RTD.	04
	(c) Explain optical encoder principle used for shaft speed measurement.	07
Q.4	(a) Explain Black Body concepts for very high temperature measurements	03
	(b) Describe with neat diagram how disappearing filament type optical pyrometer can measure very high temperature. Mention its merits and demerits.	04
	(c) Explain construction and working of Rotameter. State its advantages and disadvantages.	07
	OR	
Q.4	(a) State different methods used for Flow measurement. State advantages and disadvantages of any one of them.	03
	(b) Explain any one method used for flow measurement.	04
	(c) explain principle of operation of Capacitive Transducers for level measurements.	07
Q.5	(a) What is Hall effect? Enlist physical quantities those can be measured using Hall effect.	03
	(b) Describe the construction and working principle of Hall effect transducer.	04
	(c) Write a short note modern digital data acquisition system.	07
	OR	
Q.5	(a) Compare strip chart recorder with circular chart recorder.	03

- (b) Describe the schematic of strip chart recorder and describe its working and construction of each components. **04**
- (c) Write a short note on Macleod gauge. **07**
