

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2141705

Date:17/05/2019

Subject Name: Industrial Measurement I

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) Draw and describe functional block diagram of measurement system.	03
	(b) Define following terms of performance characteristic of the instrument briefly 1. Range & Span 2. Static error 3. Resolution 4. Drift	04
	(c) Classify self operated or power operated transducer. Justify transducer role of transducer as prime component of any measurement system.	07
Q.2	(a) Enumerate selection criteria of transducer	03
	(b) Explain Piezo-electric effect. How it will helpful to measure dynamic force? Explain it.	04
	(c) Draw and describe Pneumatic Amplifier	07
	OR	
	(c) Draw and describe C-type bourdon tube pressure gauge	07
Q.3	(a) What is atmospheric pressure? How does it measure? Describe it properly.	03
	(b) Write short notes on Manometer	04
	(c) Explain strain gauge type pressure measurement system	07
	OR	
Q.3	(a) Define 1) Absolute Pressure 2) gauge Pressure 3) Total Pressure	03
	(b) How will capacitive transducer work for pressure measurement? Describe it briefly.	04
	(c) Draw and describe construction, working and benefit with neat sketch of Pirani gauge for low pressure measurement.	07
Q.4	(a) Depict available temperature scale	03
	(b) Write down the laws of thermocouple.	04
	(c) Draw and describe working, operation and limitation of 3-wire RTD based temperature measurement.	07
	OR	
Q.4	(a) Justify the need of temperature compensation for temperature measurement.	03
	(b) What is thermopiles? Describe it briefly.	04
	(c) Define temperature sensitivity of K-Type thermocouple. Draw and describe working, operation and limitation of thermocouple based temperature measurement.	07
Q.5	(a) Draw and describe float type level indicator.	03
	(b) Draw and describe Ultrasonic Level Switch.	04
	(c) Draw and describe working, contraction, limitation and benefits of turbine flowmeter.	07
	OR	
Q.5	(a) Obtain Bernoulli equation for incompressible fluid.	03
	(b) Explain Orifice Flow meter.	04
	(c) Describe Pitot-Tube with its construction, working, installation and limitation	07
