

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- IV EXAMINATION – SUMMER 2020****Subject Code: 3141709****Date: 28/10/2020****Subject Name: Principle of Measurement Science****Time: 10:30 AM TO 01:00 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) Define sensor, temperature and precision.	03
	(b) Draw and describe functional block diagram of measurement system.	04
	(c) Explain with a neat figure, principle, construction, working, advantages and disadvantages of 2-wire, 3-wire and 4-wire RTD.	07
Q.2	(a) Define transducer and classify them in detail.	03
	(b) Explain with a neat figure, principle, construction and working of Bimetallic thermometer.	04
	(c) Write a short note on Air Purge/Bubbler type liquid level measurement with construction, working and diagram.	07
	OR	
	(c) Describe the principle of level measurement using capacitance and show using equations how capacitance changes with level change.	07
Q.3	(a) What is the significance of dead weight of tester? Explain it with schematic diagram.	03
	(b) Explain principle for ultrasonic level measurement.	04
	(c) Explain McLeod gauge for vacuum measurement with neat diagram.	07
	OR	
Q.3	(a) Define the vacuum pressure. Explain pirani vacuum gauge with all details.	03
	(b) Explain rotameter type flow meter with neat sketch.	04
	(c) Discuss the principle and construction of orifice plate flowmeter.	07
Q.4	(a) Discuss the basic principle of manometer.	03
	(b) Explain in detail thermoelectric Laws for thermocouple.	04
	(c) Explain with a neat the working of a flow meter used for measuring unsteady flow of gases.	07
	OR	
Q.4	(a) List out different displacer type level detectors. Explain torque tube type displacer level detector.	03
	(b) Explain doppler and transit time ultrasonic meter for flow measurement.	04
	(c) Explain stagnation point and working principle of pitot tube.	07
Q.5	(a) List out positive and negative metal combination for J, K, R, S, T thermocouple.	03
	(b) Explain working of pressure switch in detail	04

- (c) Explain the electromagnetic flow meter with its basic principle of operation.

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OR

- Q.5 (a) Explain flapper-nozzle assembly in detail.
(b) Explain level switch.
(c) Explain radiation pyrometer with diagram.

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