Seat No.: _____ Enrolment No._____

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.	**07**

OR

Q.5	**(a)**	Explain flapper-nozzle assembly in detail.	**03**
	(b)	Explain level switch.	**04**
	(c)	Explain radiation pyrometer with diagram.	**07**

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