Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (New) EXAMINATION – WINTER 2015

Subject Code:2141705 **Date:30/12/2015**

Subject Name: Industrial Measurement - I

Time: 2:30pm to 5:00pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is measurement? Explain different static and dynamic characteristics of measurement system.	**07**
	(b)	Define transducer. Give its classification in detail.	**07**
Q.2	**(a)**	A displacer with area of cross section 5 cm^2, length 8m and specific gravity 6 is used for measuring water level in a tank of maximum level 8 meters. The displacer is weighed with a spring balance directly. Also the displacer is used to measure the level from bottom of the tank. Assume density of water is 1000kg/m^3 i) Find out the levels when the spring balance reads 23, 22 and 21kgs. ii) What does the spring balance read when the tank is full.	**07**
	(b)	Explain 4-wire measurement circuit for RTD.	**07**
		OR	
	(b)	Explain the principle radiation pyrometers. Discuss its application.	**07**
Q.3	**(a)**	Discuss thermoelectric laws of thermocouple. Explain cold junction compensation in thermocouple.	**07**
	(b)	Discuss the basic principle of manometer. Explain different types of manometers in detail.	**07**
		OR	
Q.3	**(a)**	Explain air purge level measurement with neat sketch	**07**
	(b)	Explain capacitance type level measurement in detail	**07**
Q.4	**(a)**	Discuss Bellows type pressure sensor and its application for the measurement of absolute and gauge pressure.	**07**
	(b)	Describe the thermal conductivity gauges in detail.	**07**
		OR	
Q.4	**(a)**	Explain the testing and calibration process of pressure detectors.	**07**
	(b)	List out different displacer type level detectors. Explain torque tube type displacer level detector.	**07**
Q.5	**(a)**	Explain impeller turbine type mass flow meter.	**07**
	(b)	Explain the electromagnetic flow meter with its basic principle of operation.	**07**
		OR	
Q.5	**(a)**	What is the significance of dead weight of tester? Explain it with schematic diagram.	**07**
	(b)	Describe variable area flowmeter with its basic construction.	**07**

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