Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2141705 **Date: 06/06/2017**

Subject Name: Industrial Measurement I

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		**Short Questions**	**14**
	1	Why 4-20 mA is selected as industrial measurement standard of current?	
	2	Give example of Active & Passive Transducers.	
	3	Convert 234 °R into °K, °F and °C.	
	4	Among RTD, Thermistor & Thermocouple, which is having high linearity?	
	5	For body temperature measurement which temperature sensor (RTD, Thermistor or Thermocouple) will you select? Justify your answer.	
	6	For dynamic pressure measurement Piezoelectric pressure transducer are suitable. (Yes/No) Justify your answer.	
	7	Bourdon tube is pressure Sensor or Transducer. Justify your answer.	
	8	Enlist low pressure gauges & units for low pressure measurement.	
	9	Convert 1 bar in to PSI, Pa, mmHg, mmWg.	
	10	If fluid is corrosive then which Level Sensor will you select & why?	
	11	In turbulent flow profile, center velocity is _____ times peripheral velocity?	
	12	Enlist direct flow meters.	
	13	Enlist contact less flow measurement technique.	
	14	Define Vena Contracta & Stagnation Point.	
Q.2	**(a)**	Write a short note on vibrating type level switches.	**03**
	(b)	Explain Resistance Type level measurement system.	**04**
	(c)	Explain Gamma ray level measurement system with its advantages & disadvantages.	**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)**	Explain in brief dynamic characteristics of measurement system.	**03**
	(b)	Write short note on selection criteria for transducer.	**04**
	(c)	With neat diagram, explain the working of Dead Weight Piston Gauge.	**07**
		OR	
Q.3	**(a)**	Explain manometer for pressure measurement.	**03**
	(b)	Explain flapper-nozzle assembly.	**04**
	(c)	Enlist gauges used to measure vacuum & explain any one in detail with its advantages and disadvantages.	**07**
Q.4	**(a)**	Compare RTD, Thermistor and Thermocouple.	**03**
	(b)	Explain total radiation pyrometer.	**04**
	(c)	With neat diagram, explain the working of 2-wire, 3-wire and 4-Wire RTD with advantages and disadvantages.	**07**

OR

Q.4	**(a)**	Explain law of intermediate metal in thermocouple.	**03**
	(b)	Importance of Cold Junction Compensation & its circuits.	**04**
	(c)	Explain static characteristics of measurement system in detail.	**07**
Q.5	**(a)**	Specify Units of Flow. Classify flow meters.	**03**
	(b)	Explain venturi tube for flow measurement.	**04**
	(c)	Explain transducer classification in detail.	**07**

OR

Q.5	**(a)**	Explain rotameter for flow measurement with its limitation.	**03**
	(b)	Explain electromagnetic flow meter.	**04**
	(c)	Explain Doppler and Transit time Ultrasonic meter for flow measurement.	**07**

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