Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – WINTER 2013

Subject Code: 162303 **Date: 02-12-2013**

Subject Name: Plastics Process Instrumentation and Process Control

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.**

Q.1	**(a)**	Define True value, Static error, Random error and Source of Error.	**07**
	(b)	Define Accuracy, Precision, Repeatability, and Dead Zone	**07**
Q.2	**(a)**	Define, draw and derive equations for (i) Step Response and (ii) Impulse Response	**07**
	(b)	Define, draw and derive equations for (i) Impulse function and (ii)Sinusoidal input	**07**
		OR	
	(b)	Give a broad classification of Electrical Measuring Instruments.	**07**
Q.3	**(a)**	With the help of figure explain (i) Period of Oscillation (ii) Natural Period of Oscillation.	**07**
	(b)	A thermometer having time constant of 10 seconds is placed in a bath. After it reaches 30 ^{0}c as steady state, it is suddenly placed in a hot fluid at 60 ^{0}c. Sketch the response of the thermometer. Use graph paper to plot t and y (t).	**07**
		OR	
Q.3	**(a)**	Derive an equation for Impulse Response for less than 1, equal to 1 and more than 1.	**07**
	(b)	Explain Strain Gauge with neat sketch.	**07**
Q.4	**(a)**	What is meaning of On-Machine monitoring. Explain On-Machine monitoring for Injection Molding Process.	**07**
	(b)	Give expressions for stored quantity, driving force, flow resistance and capacity for the system of (i) thermometer (ii) Liquid level process (iii) Mixing level process and RC circuit	**07**
		OR	
Q.4	**(a)**	Write short notes on (i)Pressure Measuring Instruments (ii) Resistance Thermometer	**07**
	(b)	Explain various static characteristics of an instrument in brief.	**07**
Q.5	**(a)**	Draw a schematic diagram of High Sensitivity Controller and explain its working in detail.	**07**
	(b)	Explain in brief - Barrel temperature measurements & Melt temperature measurements in Extrusion Process.	**07**
		OR	
Q.5	**(a)**	Make a comparison sheet for various Pressure Transducers used in Extrusion Process.	**07**
	(b)	Derive the equation for the response of Interacting Liquid Level System.	**07**

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