Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – WINTER 2013

Subject Code: 161701 **Date: 27-11-2013**

Subject Name: Instrumentation System

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)**	Give details about check list of good installation practices	**07**
	(b)	Describe typical control valve transmitter check-out procedure.	**07**
Q.2	**(a)**	Draw the following graphical symbols as per ISA standards (1)Needle valve (2) plug valve (3) guided sonic signal (4) rotary valve (5)speed transmitter (6) damper (7) venture tube	**07**
	(b)	Discuss sizing criteria, pressure level and source criteria.	**07**
		OR	
	(b)	Compare plant air and instrument air. Explain instrument air supply system for any process industry with necessary diagram	**07**
Q.3	**(a)**	Compare positive displacement and dynamic type compressor. Explain axial-flow and screw type compressor.	**07**
	(b)	Why dryer is needed? Explain heatless and refrigeration type in detail.	**07**
		OR	
Q.3	**(a)**	Give details about distribution system and control room air supply.	**07**
	(b)	Discuss control panel types.	**07**
Q.4	**(a)**	Describe various methods used for flow measurement. Explain selection criteria for vortex meters and rota meters.	**07**
	(b)	Describe various methods used for temperature measurement. Explain selection criteria for thermocouple and optical pyrometer.	**07**
		OR	
Q.4	**(a)**	Draw the following graphical symbols as per ISA standards (1)Ball valve (2) check valve (3) safety valve (4)electrical line (5)PLC (6) magnetic flow meter (7) water cooled condenser	**07**
	(b)	Draw and explain instrument index sheets and instrument specification sheets	**07**
Q.5	**(a)**	Describe intrinsic safety.	**04**
	(b)	Explain loop wiring diagrams	**04**
	(c)	Compare process flow sheet and mechanical flow sheet.	**06**
		OR	
Q.5	**(a)**	Give details about duties, jobs and responsibilities of project manager.	**04**
	(b)	Explain typical installation details about diaphragm operated control valve.	**04**
	(c)	Describe typical installation details about pressure gauge.	**06**

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