Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIth SEMESTER–EXAMINATION – MAY- 2012

Subject code: 161701 **Date: 09/05/2012**

Subject Name: Instrumentation System

Time: 10:30 am – 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.**

Q.1	**(a)**	Draw following flow sheet symbols: 1. Ball valve 2.Water cooled condenser 3. Check valve 4. Capillary tube 5. Diaphragm spring opposed actuator with positioner 6. Variable area flow indicator 7.Thermocouple connected to multipoint scanning recorder	**07**
	(b)	Describe typical flow transmitter checkout procedure.	**07**
Q.2	**(a)**	Justify the importance of P&I diagram and Instrument specification sheets.	**07**
	(b)	Define startup time. Discuss the problems to be faced during this period.	**07**
		OR	
	(b)	Compare Pneumatic versus Electronic Instrumentation and Control systems.	**07**
Q.3	**(a)**	Draw and explain electronic loop wiring diagram.	**07**
	(b)	Classify hazardous area and material according to NEC.	**07**
		OR	
Q.3	**(a)**	Explain Intrinsic safety. Discuss it's advantages and drawbacks.	**07**
	(b)	Explain three types of electrical power supply systems for the instrument panel, used in control room.	**07**
Q.4	**(a)**	Describe control panel types.	**07**
	(b)	Enumerate various factors to be considers in designing good quality Instrument Air System. Explain the factor related to distribution of Instrument Air.	**07**
		OR	
Q.4	**(a)**	What are the working principles of positive displacement and dynamic compressors? Explain centrifugal compressor.	**07**
	(b)	Draw and explain the Instrument Air supply source where tie in is made from the plant air source using a standard pressure control station, as a back up in case the Instrument Air compressor fails.	**07**
Q.5	**(a)**	Discuss calibration methods used during construction phase of any big process industry.	**07**
	(b)	Explain the duties and responsibilities of project manager.	**07**
		OR	
Q.5	**(a)**	Compare following primary elements used for differential flow meter: 1. orifice plates 2. venturi tube 3. flow nozzle	**07**
	(b)	Explain capacitance type level instrument for continuous and point measurement.	**07**

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