Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016

Subject Code:2151704 **Date:17/11/2016**

Subject Name:Control System Components

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		**Give explanation about following terms.**	**14**
	1	Draw ISA Symbol for Pressure relief valve, Damper	
	2	Draw ISA Symbol for Variable area flow indicator, Capillary tube.	
	3	Draw ISA Symbol for Ball Valve, Water Cooled condenser	
	4	Draw ISA Symbol for Safety valve, Relief Valve	
	5	Actuator	
	6	Flow Coefficient	
	7	Rupture Disc	
	8	Valve capacity	
	9	Bellow seal	
	10	Trim	
	11	Galling	
	12	Rangeability	
	13	Yoke	
	14	Bonnet Assembly	
Q.2	**(a)**	Explain about control room layout	**03**
	(b)	Explain the Electrical power system used for control room.	**04**
	(c)	Give the classification of control panels. Explain Break Front Panel with sketch.	**07**
		OR	
	(c)	List the classification of compressor used for Instrument air supply and explain any one type in detail with sketch advantages and Disadvantages.	**07**
Q.3	**(a)**	Explain with diagram about different Control valve flow characteristics.	**03**
	(b)	List the criteria for the selection of control valves.	**04**
	(c)	List and sketch different types of control valve. Differentiate between single port & double port design of globe valve.	**07**
		OR	
Q.3	**(a)**	What is the need of valve Positioner for the operation of control valve?	**03**
	(b)	What is cavitation? Explain different valve noise problem.	**04**
	(c)	List out various control valve accessories. Explain any three control valve accessories with figure and its role in control valve operation.	**07**
Q.4	**(a)**	Compare electric safety and intrinsic safety with suitable example.	**03**
	(b)	Explain I/P Converter with suitable sketch &Example.	**04**
	(c)	Classify hazardous area and material according to N. E. C.	**07**
		OR	
Q.4	**(a)**	Explain V/I Converter with suitable Example.	**03**
	(b)	Explain P/I Converter with suitable sketch &Example.	**04**
	(c)	List and sketch different types of actuators in control valve explain any one in detail with example and sketch.	**07**
Q.5	**(a)**	Define recorder. Explain types of recorder with neat Sketch, its merit and demerits.	**03**
	(b)	Explain pneumatic transmitter with its application	**04**
	(c)	Enumerate various factors to be considered in designing good quality	**07**

instrument air system. Explain the factors related to distribution of Instrument air.

OR

Q.5	**(a)**	Difference between 2-wire transmitter and 4-wire transmitter.	**03**
	(b)	Compare electric safety and intrinsic safety with suitable example.	**04**
	(c)	Explain Function & its Types of Annunciator.	**07**

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