

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

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| 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 |
