Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2151704 Date:12/05/2018

Subject Name:Control System Components

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.**

			MARKS
Q.1	**(a)**	Draw ISA Symbol for Pressure relief valve, Damper, Ball Valve, Safety valve, Relief Valve, Actuator	**03**
	(b)	Draw ISA Symbol for various types of lines used in P&I diagram.	**04**
	(c)	Give explanation about following terms Flow Coefficient, Rangeability, Valve capacity, Galling, Flashing, Choking, Bonnet	**07**
Q.2	**(a)**	Explain the Electrical power system used for control room.	**03**
	(b)	Explain about control room layout	**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 out various control valve accessories. Explain any three control valve accessories with figure and its role in control valve operation.	**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 and sketch different types of control valve. Differentiate between single port & double port design of globe valve.	**07**
Q.4	**(a)**	Compare electric safety and intrinsic safety with suitable example.	**03**
	(b)	Explain P/I 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 I/P 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)**	Difference between 2-wire transmitter and 4-wire transmitter..	**03**
	(b)	Compare electric safety and intrinsic safety with suitable example	**04**
	(c)	Enumerate various factors to be considered in designing good quality instrument air system. Explain the factors related to distribution of Instrument air.	**07**
		OR	
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)	Explain Function & its Types of Annunciator.	**07**

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