

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- V EXAMINATION-SUMMER 2023****Subject Code: 3151709****Date: 28/06/2023****Subject Name: Process Instrumentation****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.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

Q.1	(a) Symbolize the following:	03
	1) Motorized Control Valve	
	2) Self Actuated Control Valve	
	3) Conductivity Measurement	
	(b) Draw the instrumentation diagram of the following.	04
	1) Multiple temperature measurement locally mounted indicators, temperature recording controller board mounted instrument with electrical transmission.	
	2) Flow indicating controller board mounted instrument, resetting locally mounted pressure controller with pneumatic transmission.	
	(c) Explain breakfront panel with suitable neat sketch and merits	07
Q.2	(a) List out the details for control room lighting requirements.	03
	(b) Enumerate the different communication systems for the plant.	04
	(c) Discuss control room layout with neat sketch.	07
	OR	
	(c) Explain positive displacement type compressor in detail.	07
Q.3	(a) Explain graphic, non graphic and semi graphic display of Control room.	03
	(b) Justify the importance of Valve Positioner.	04
	(c) Design the instrument air supply system with provision of plant air in case of emergency with neat sketch.	07
	OR	
Q.3	(a) Enlist importance and limitations of electro hydraulic actuator.	03
	(b) Enumerate split range control scheme with neat sketch.	04
	(c) Explain desiccant type dryers in detail.	07
Q.4	(a) Compare single seated and double seated Control Valve.	03
	(b) Write in details about Rupture Discs.	04
	(c) Discuss the flow characteristic of Control Valve.	07
	OR	
Q.4	(a) Give the merits and demerits of circular chart recorder.	03
	(b) Give the merits and demerits of strip chart recorder with features.	04
	(c) Give the design of any annunciation scheme and sequence of events in it.	07
Q.5	(a) Define: Rangeability, Turndown, C_v	03
	(b) Explain pressure relief valve with its operation.	04
	(c) Explain smart transmitter in detail.	07

OR

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| Q.5 | (a) | List the testing procedure of Control valve. | 03 |
| | (b) | Differentiate between 2 wire and 4 wire electronic transmitter. | 04 |
| | (c) | Explain force balance pneumatic transmitter in detail. | 07 |
