

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023****Subject Code:3151709****Date:13-12-2023****Subject Name:Process Instrumentation****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Symbolize the following:	03
	1) Butterfly Control Valve	
	2) Steam trap intermittent type	
Q.1	(b) Draw the instrumentation diagram of the following.	04
	1) Multiple pressure measurement locally mounted indicators, pressure recording controller board mounted instrument with electrical transmission.	
	2) Temperature indicating controller board mounted instrument, resetting locally mounted flow controller with pneumatic transmission.	
Q.1	(c) Explain classification of control panels with merits and demerits of each.	07
Q.2	(a) List out the different communication systems for the plant.	03
	(b) Explain the importance of panel bid specification.	04
	(c) Design control room power requirement with inverter, battery backup and Generator option with neat sketch.	07
OR		
Q.2	(c) Explain Dynamic compressors in detail.	07
Q.3	(a) Explain graphic, non graphic and semi graphic display of Control room.	03
	(b) List out the factors for selection of actuators.	04
	(c) Explain the instrument air supply system in the process plant with neat sketch.	07
OR		
Q.3	(a) Enlist importance and limitations of Spring & Diaphragm actuator.	03
	(b) Enumerate split range control scheme with neat sketch.	04
	(c) Explain refrigeration type dryers in detail.	07
Q.4	(a) Enumerate the importance of double seated Control Valve.	03
	(b) Enlist advantages and disadvantages of Vee ball Control Valve.	04
	(c) Discuss the flow characteristic of Control Valve.	07
OR		
Q.4	(a) Give the Limitations of circular chart recorder.	03
	(b) Give the sequence of operation for annunciation in the plant.	04
	(c) Explain the operation of strip chart recorder with different features.	07
Q.5	(a) Enlist advantages and disadvantages of 3 way Globe Control Valve.	03
	(b) Explain pressure relief valve with its operation.	04
	(c) Explain I to P converter with neat sketch.	07

OR

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| Q.5 | (a) | List the important features of smart transmitter. | 03 |
| | (b) | Explain 4 wire electronic transmitter in detail. | 04 |
| | (c) | Explain motion balance pneumatic transmitter in detail. | 07 |