

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER- V EXAMINATION – SUMMER 2026****Subject Code:3151709****Date:30-05-2026****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

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|------------|-----|---|-----------|
| Q.1 | (a) | Symbolize the following: | 03 |
| | | 1) Four way Control Valve | |
| | | 2) Steam trap continuous type | |
| | | 3) PH Measurement | |
| | (b) | Draw the instrumentation diagram of the following. | 04 |
| | | 1) Multiple level measurement locally mounted indicators, level recording controller board mounted instrument with electrical transmission. | |
| | | 2) Pressure indicating controller board mounted instrument, resetting locally mounted flow controller with pneumatic transmission. | |
| | (c) | Explain break front control panel with merits and demerits. | 07 |
| Q.2 | (a) | List out points for control room lighting for the plant. | 03 |
| | (b) | Explain the importance of panel bid specification. | 04 |
| | (c) | Design control room lay out with neat sketch. | 07 |
| | | OR | |
| | (c) | Explain positive displacement type compressors in detail. | 07 |
| Q.3 | (a) | Explain graphic, non graphic and semi graphic display of Control panel. | 03 |
| | (b) | List out merits and demerits of piston type actuator. | 04 |
| | (c) | Explain the instrument air supply system for large process plant with provision to take plant air in case of emergency requirement. | 07 |
| | | OR | |
| Q.3 | (a) | Enlist importance and limitations of electrohydraulic actuator. | 03 |
| | (b) | Enumerate split range control scheme with neat sketch. | 04 |
| | (c) | Explain dessicant type dryers in detail. | 07 |
| Q.4 | (a) | Compare double seated Control Valve with its single seated version. | 03 |
| | (b) | Enlist advantages and disadvantages of Venturi Angel Control Valve. | 04 |
| | (c) | List out the factors that emphasis need of control valve positioner. | 07 |
| | | OR | |
| Q.4 | (a) | Give the features of strip chart recorder. | 03 |
| | (b) | Explain the annunciation scheme with its operation. | 04 |
| | (c) | Explain the operation of circular chart recorder with different features. | 07 |
| Q.5 | (a) | Enlist advantages and disadvantages of split body Control Valve. | 03 |
| | (b) | Explain rupture discs in detail. | 04 |
| | (c) | Explain F to V converter with neat sketch. | 07 |

OR

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|------------|------------|---|-----------|
| Q.5 | (a) | Explain superiority of smart transmitter over other transmitters. | 03 |
| | (b) | Explain 2 wire electronic transmitter in detail. | 04 |
| | (c) | Explain force balance pneumatic transmitter in detail. | 07 |
