

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3151709****Date:17/09/2021****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.

- Q.1** (a) Draw ISA Symbols of (1) Venturi Tube (2) Target Flow Meter (3) Plug Valve **03**
- (b) Discuss Panel Piping and Panel Tubing **04**
- (c) List Control Valve Accessories. Explain any four in detail. **07**
- Q.2** (a) Discuss rupture disc in detail. **03**
- (b) Explain any one type of recorder with its advantage and disadvantage **04**
- (c) Explain pneumatic transmitters in detail. **07**
- OR**
- (c) Draw ISA symbols for following (any seven) **07**
- (1) Butterfly valve (2) Electric Line (3) Water cooled condenser (4) Damper (5) Pressure relief valve (6) Capillary tube (7) Variable area flow indicator (8) Safety valve
- Q.3** (a) Explain Electric to Pneumatic (I-P) Converter with neat sketch. **03**
- (b) Write a short note on Diaphragm valve. **04**
- (c) What is Actuator? Explain the Pneumatic Type actuator in detail. **07**
- OR**
- Q.3** (a) Discuss instrument power requirements in brief. **03**
- (b) Define valve rangeability and valve capacity. **04**
- (c) Give the classification of control panels. Also compare them. **07**
- Q.4** (a) What is cavitation? Explain different valve noise problem. **03**
- (b) Discuss graphic displays in brief. **04**
- (c) Explain in detail difference between 2-wire transmitter and 4-wire transmitter. **07**
- OR**
- Q.4** (a) Differentiate between single port & double port design of globe valve. **03**
- (b) Draw ISA Symbol for various types of lines used in P&I diagram. **04**
- (c) Explain different type of compressor used in instrument air system **07**
- Q.5** (a) Explain with diagram about different Control valve flow characteristics. **03**
- (b) Discuss about Smart Transmitter, its features, advantages and disadvantages **04**
- (c) Give classification of dryers and explain desiccant type dryers in detail. **07**
- OR**
- Q.5** (a) Explain V/I Converter with suitable Example. **03**
- (b) Discuss Annunciator Sequence in detail. **04**
- (c) Classify hazardous area and material according to N. E. C. **07**
