

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – WINTER 2013****Subject Code: 161701****Date: 27-11-2013****Subject Name: Instrumentation System****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.

- Q.1** (a) Give details about check list of good installation practices **07**
(b) Describe typical control valve transmitter check-out procedure. **07**
- Q.2** (a) Draw the following graphical symbols as per ISA standards **07**
(1) Needle valve (2) plug valve (3) guided sonic signal (4) rotary valve
(5) speed transmitter (6) damper (7) venture tube
(b) Discuss sizing criteria, pressure level and source criteria. **07**
- OR**
- (b) Compare plant air and instrument air. Explain instrument air supply system for any process industry with necessary diagram **07**
- Q.3** (a) Compare positive displacement and dynamic type compressor. Explain axial-flow and screw type compressor. **07**
(b) Why dryer is needed? Explain heatless and refrigeration type in detail. **07**
- OR**
- Q.3** (a) Give details about distribution system and control room air supply. **07**
(b) Discuss control panel types. **07**
- Q.4** (a) Describe various methods used for flow measurement. Explain selection criteria for vortex meters and rota meters. **07**
(b) Describe various methods used for temperature measurement. Explain selection criteria for thermocouple and optical pyrometer. **07**
- OR**
- Q.4** (a) Draw the following graphical symbols as per ISA standards **07**
(1) Ball valve (2) check valve (3) safety valve (4) electrical line
(5) PLC (6) magnetic flow meter (7) water cooled condenser
(b) Draw and explain instrument index sheets and instrument specification sheets **07**
- Q.5** (a) Describe intrinsic safety. **04**
(b) Explain loop wiring diagrams **04**
(c) Compare process flow sheet and mechanical flow sheet. **06**
- OR**
- Q.5** (a) Give details about duties, jobs and responsibilities of project manager. **04**
(b) Explain typical installation details about diaphragm operated control valve. **04**
(c) Describe typical installation details about pressure gauge. **06**
