

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA ENGINEERING – SEMESTER – V• EXAMINATION – SUMMER 2016**

**Subject Code: 3351701**

**Date:07/05/2016**

**Subject Name: Electronic & Pneumatic 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. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

- Q.1** Answer any seven out of ten. **14**
1. Draw output response of proportional controller for step input.
  2. Draw output response of integral controller for step input.
  3. Draw output response of derivative controller for step input.
  4. Draw circuit diagram of voltage to current converter.
  5. List out different types of converters used for instrumentation.
  6. State standard unit and range for electronic signal used in instrumentation.
  7. State standard unit and range for pneumatic signal used in instrumentation.
  8. List out different controller tuning methods.
  9. Define Proportional Band.
  10. Define offset error.
- Q.2** (a) Draw block diagram of ramp DVM. **03**
- OR
- (a) Draw block diagram of SSG. **03**
- (b) Draw circuit diagram of Wheatstone Bridge and write equation to find out unknown resistance. **03**
- OR
- (b) Draw circuit diagram of Maxwell Bridge and write equation to find out unknown resistance. **03**
- (c) Compare electronic and pneumatic instruments. **04**
- OR
- (c) Describe construction of moving iron type instrument with neat sketch. **04**
- (d) List out electronic laboratory instruments. **04**
- OR
- (d) List out electronic field instruments. **04**
- Q.3** (a) Why pressure regulators are used in industry? **03**
- OR
- (a) Explain motion balance principle with neat sketch. **03**

- (b) Explain mV to Current Converter for thermocouples with neat sketch. **03**  
OR
- (b) Draw force balance type pneumatic transmitter. **03**  
(c) Explain instrumentation amplifier with neat sketch. **04**  
OR
- (c) Draw motion balance type pneumatic transmitter. **04**  
(d) Distinguish between conventional transmitter and smart transmitter. **04**  
OR
- (d) Explain instrumentation amplifier with neat sketch. **04**
- Q.4** (a) Draw pneumatic proportional + Derivative controller **03**  
OR
- (a) Draw pneumatic proportional + integral controller **03**  
(b) Describe flapper nozzle mechanism. **04**  
OR
- (b) Describe working of mV to Current Converter for thermocouples with the circuit diagram. **04**
- (c) Draw block diagram of CRO and explain each block. **07**
- Q.5** (a) Draw circuit diagram of electronic proportional controller and write mathematical expression for it. **04**  
(b) Draw circuit diagram of electronic integral controller and write mathematical expression for it. **04**  
(c) Draw pneumatic to electronic converter. **03**  
(d) Draw block diagram of smart transmitter. **03**

\*\*\*\*\*