Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: 3351701 **Date: 26-11-2014**

Subject Name: Electronic & Pneumatic Instrumentation

Time: 10:30 am - 1:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **English version is considered to be Authentic.**

Q.1 Answer any seven out of ten. 14

1. Draw output response of proportional controller for ramp input.
2. Draw output response of integral controller for ramp input.
3. Draw output response of derivative controller for ramp input.
4. Draw circuit diagram of voltage to current convertor.
5. Enlist types of converter.
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 electronic instrument based on Field instruments.
9. List out controller tuning methods.
10. State the features of intelligent transmitter.

Q.2 (a) Draw block diagram of C.R.O. **03**

OR

(a) Draw block diagram of S.S.G. **03**

(b) Draw circuit diagram of Wheatstone Bridge and write equation to find out unknown resistance. **03**

OR

(b) Draw circuit diagram of Kelvin Bridge and write equation to find out unknown resistance. **03**

(c) Why standardization of signal is required? **04**

OR

(c) Compare electronic and pneumatic instruments. **04**

(d) Describe construction of PMMC type electric meters with neat schematic diagram. **04**

OR

Q.2	(d)	Define Proportional Band and offset error.	**04**
Q.3	(a)	Why pressure regulator is required in industry.	**03**
		OR	
	(a)	Draw motion balance type pneumatic transmitter.	**03**
	(b)	Draw pneumatic proportional controller.	**03**
		OR	
	(b)	Draw force balance type pneumatic transmitter.	**03**
	(c)	Compare conventional transmitter with smart transmitter.	**04**
		OR	
	(c)	Explain current transformer with sketch.	**04**
	(d)	Explain moment balance principle with neat sketch.	**04**
		OR	
	(d)	Explain motion balance principle with neat sketch.	**04**
Q.4	(a)	Explain mV to Current Converter for thermocouples with sketch.	**03**
		OR	
	(a)	Draw force balance type electronic transmitter.	**03**
	(b)	Draw pneumatic proportional + Derivative controller.	**04**
		OR	
	(b)	Draw motion balance type electronic transmitter .	**04**
	(c)	Describe Pneumatic to Electronic (P/I) converter with neat sketch.	**07**
Q.5	(a)	Draw circuit diagram of electronic integral controller and write mathematical expression for it.	**04**
	(b)	Draw circuit diagram for electronic derivative controller and write mathematical expression for it.	**04**
	(c)	Draw flapper nozzle mechanism.	**03**
	(d)	Draw electronic to pressure convertor.	**03**

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