

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV(New) • EXAMINATION – WINTER 2016

Subject Code:2141704

Date:21/11/2016

Subject Name:Measurement & Instruments

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.

	MARKS
Q.1 Short Questions	14
1 Define Hall effect coefficient.	
2 A 150 V moving iron voltmeter of accuracy class 1.0 reads 75 V. When used in a circuit under a standard condition, find the maximum possible percentage error in the reading.	
3 How a PMMC instrument can be used as a flux meter?	
4 On which axis time base signal is applied in CRO?	
5 Which is the main advantage of crystal oscillator with respect to output?	
6 Which quantity measured by ballistic galvanometer?	
7 From which test we can find open circuit faults in cable?	
8 For which fault detection Murry loop test can be used?	
9 What is the ohms/volt rating of a voltmeter with (a) a 1-mA movement (b) a 50- μ A movement.	
10 Given a metal film resistor with color bands. A= Red, B= Orange, C= Yellow, D= Orange, E= Silver. Determine the resistance value and tolerance.	
11 Give the range and tolerance of carbon composition resistor.	
12 Which methods are used for testing of current transformer and potential transformer?	
13 Define pulse generator.	
14 Give the application of vector voltmeter.	
Q.2 (a) Explain special purpose analog meter.	03
(b) Draw and explain Digital to Analog converter.	04
(c) Explain PMMC meter in details with neat diagram.	07
OR	
(c) Define and explain indicating and recording type of instruments.	07
Q.3 (a) Write a short note on oscilloscope probes.	03
(b) Explain frequency measurement using zero- beat frequency meter.	04
(c) Explain architecture and block diagram of DSO.	07
OR	
Q.3 (a) Write a short note on Lissajous patterns of oscilloscope.	03
(b) Explain distortion analyzer.	04
(c) Explain horizontal deflection subsystem of oscilloscope.	07
Q.4 (a) How voltmeter-ammeter method can be used to measure unknown resistance?	03
(b) Explain polyphase power measurement.	04
(c) Explain in brief: Wheatstone bridge to find the value of unknown resistance.	07

OR

- Q.4** (a) Write a short note on ohmmeter. **03**
(b) Describe how to use dynamometer to measure power quantity. **04**
(c) Explain Hay's bridge method to find out unknown frequency. **07**
- Q.5** (a) Explain errors in current transformer. **03**
(b) Define following terms for pulse generator. **04**
1. Overshoot
2. Ringing
3. Sag of Droop
4. Settling time
(c) Describe the construction and working of Techogenerators. **07**
- OR**
- Q.5** (a) Give the differences between current transformer and potential transformer. **03**
(b) Explain sweep frequency generator. **04**
(c) Explain advantages and disadvantages of moving iron power factor meter. **07**
