Experiment No: - 3

Title:- DC VOLTAGE & CURRENT MEASUREMENT.

Aim:-

i) To measure the voltage in a given circuit using analog voltmeter, digital voltmeter, and storage oscilloscope using DC Supply. To compare the voltage measurement.

ii) To measure the current in a given circuit using analog ammeter, digital ammeter, and storage oscilloscope using DC Supply. To compare the current measurement.

Apparatus:-

Sl. No.	Name	Specification	Quantit
1	Voltmeter	0-1/3/10/30; moving coil	
2	Ammeter	0-0.1/0.3/1/3A; moving coil	
3	NI ELVIS :		
	1. Digital Multimeter		
	2. Digital storage	2 channel, 100MHz	
	3. Regulated DC Power	0-12V, 2A; (-15V-0-15V)±10%,0.5A;	
	4. Function Generator	0-20Vpp, 5A, 50Hz	

Theory:

Procedure

a) Measurement of DC Voltage

i) Measure the voltage of a regulated DC power supply using an analog voltmeter.
ii) Repeat the measurement using digital voltmeter (multimeter).
iii) Repeat the measurement using digital storage oscilloscope.
iv) Compare the results.
v) Find the range, resolution, precision, and accuracy of three different measuring instru

a. Measurement of DC Current

i) Connect a load (rheostat) to a regulated DC power supply.
ii) Measure the current using an analog ammeter.
iii) Repeat the measurement using digital multimeter.
iv) Connect a resistance in series with the load.
v) Measure the voltage across the resistance using CRO
vi) Current in the circuit is calculated as V/R.
vii) Compare the results.
viii) Find the range, resolution, precision, and accuracy of three different measu instruments.

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a) **Measurement of DC Voltage**

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Observation

Table 1:- Table showing results for **DC Voltage** measurement in three different methods

Sl. No.	Analog meter			Multimeter	Digital storage oscilloscope		
	Least count (V)	No. of Divisions	Voltage (V)	Voltage (V)	Least count (V)	No. of Division	Voltage (V)
1							
2							
3							
4							
5							

Table 2:- Table showing results for **DC Current** measurement in three different methods

Sl.	Analog meter			Multimeter	Digital storage oscilloscope			
	Least count (V)	No. of Divisions	Current (A)	Current (A)	Least count (V)	No. of Divisions	Voltage (V)	Current (A)= V/R
1								
2								
3								
4								
5								

Calculation:-

Result and Conclusion:-

Discussion:- (Write the answer of this question in your lab report)

A sinusoidal voltage is measured with an analog meter, a digital multimeter and a CRO. The readings are close to each other. But when a triangular wave is measured the readings deviated a lot. Why?