Experiment No:-4

Title:- AC VOLTAGE & CURRENT MEASUREMENT.

Aim:-

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

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

Apparatus:-

Sl. No.	Name	Specification	Quantity
1	Voltmeter	0-1/3/10/30; moving Iron	
2	Ammeter	0-.2/1; moving Iron	
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 AC Voltage

i) Measure the voltage of a function generator using an analog voltmeter.
ii) Repeat the measurement using digital voltmeter
iii) Repeat the measurement using digital storage oscilloscope
iv) Compare the results.
v) Find the range, resolution and accuracy of three different measuring instruments.

b. Measurement of AC current

i) Connect a load (rheostat) to function generator
ii) Measure the current using an analog ammeter.
iii) Repeat the measurement using digital multimeter
ix) Connect a resistance in series with the load.

x) Measure the voltage across the resistance using CRO.
xi) Current in the circuit is calculated as V/R.
xii) Compare the results.
xiii) Find the range, resolution, precision, and accuracy of three different measuring instruments.

Observation

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

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

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

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

Calculation:-

Result and Conclusion:-

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

Why the resistance is connected between the load and the ground? Why it is not connected between source and the load?