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Experiment No.1

Introduction To Basic Electronics Devices & Components

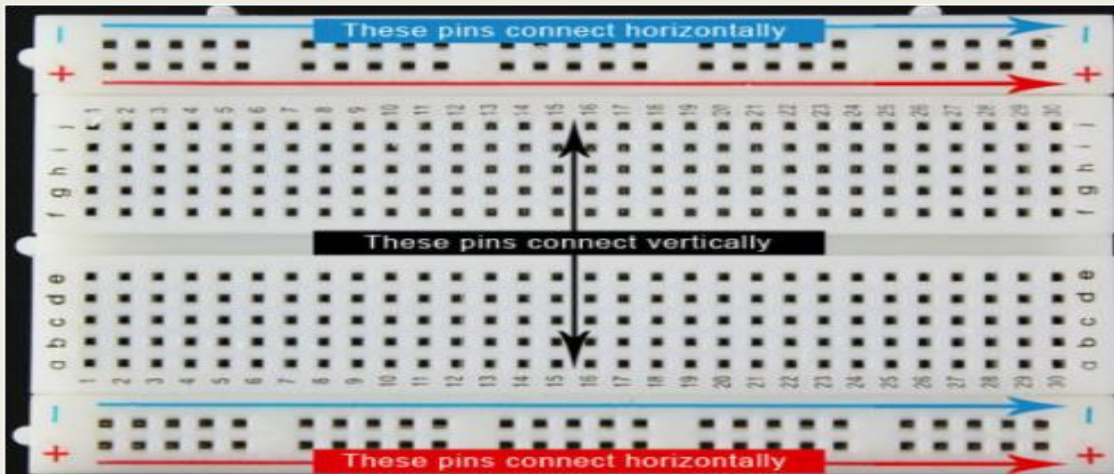
1. Objectives

To get familiar with working knowledge of the following Instruments.

2. Theory

There are many electronic components in addition to several devices which are used to calculate the voltage, current, or to generate a sine wave, triangle wave and so on, which are listed below:

Breadboard: Breadboards are an essential tool for prototyping and building temporary circuits. These boards contain holes for inserting wire and components. Because of their temporary nature, they allow you to create circuits without soldering. The holes in a breadboard are connected in rows both horizontally and vertically as shown below



Function generator :A function generator is a specific form of signal generator that is able to generate waveforms with common shapes. Unlike RF generators and some others that only create sine waves, the function generator is able to create repetitive waveforms with a number of common shapes. In particular it can be made to become a sine wave generator, square wave generator, and triangular wave generator.



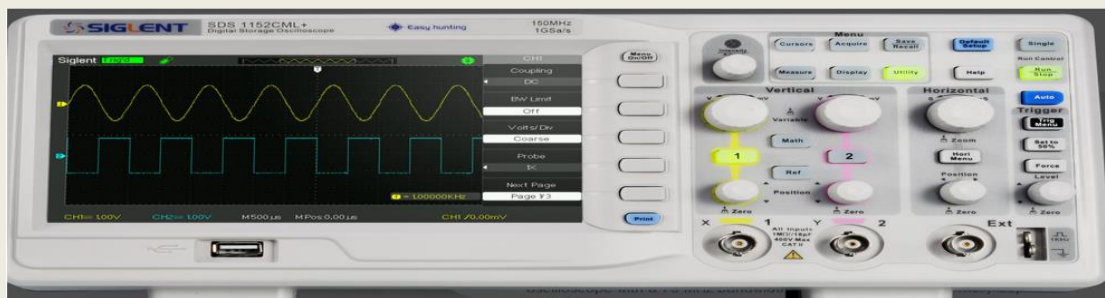
Power Supply: A power supply is an electrical device that supplies electric power to an electrical load. The primary function of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load.



Digital Multimeter: A multimeter is a device that's used to measure electric current (amps), voltage (volts) and resistance (ohms). It's a great for troubleshooting circuits and is capable of measuring both AC and DC voltage



oscilloscope : An oscilloscope is a laboratory instrument commonly used to display and analyze the waveform of electronic signals. In effect, the device draws a graph of the instantaneous signal voltage as a function of time.



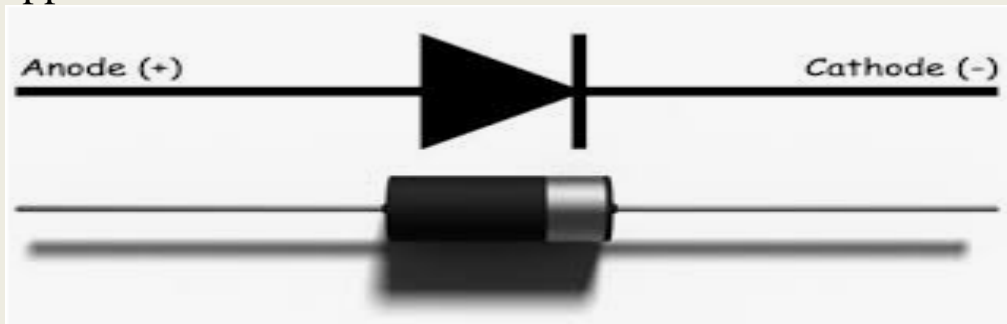
Resistance: Resistance is a measure of the opposition to current flow in an electrical circuit. Resistance is measured in ohms, symbolized by the Greek letter omega (Ω). Ohms are named after Georg Simon Ohm (1784-1854), a German physicist who studied the relationship between voltage, current and resistance.



Capacitor: Capacitors store electricity and then discharges it back into the circuit when there is a drop in voltage. A capacitor is like a rechargeable battery and can be charged and then discharged. The value is measured in F (Farad), nano Farad (nF) or pico Farad (pF) range.



Diode: A diode is a semiconductor device that essentially acts as a one-way switch for current. It allows current to flow easily in one direction, but severely restricts current from flowing in the opposite direction.



Transistor: A transistor is a semiconductor device used to amplify or switch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit.



Ohmmeter: is an electrical instrument that measures electrical resistance (the opposition offered by a circuit or component to the flow of electric current). Multimeters also function as ohmmeters when in resistance-measuring mode.



Voltmeter

A voltmeter is an instrument used for measuring electric potential difference between two points in an electric circuit.



Discussion

- ❖ What is Oscilloscope ?
- ❖ How can measure the resistance ?
- ❖ Voltmeter& Multimeter use for what?