



Course Name:	Elements of Electrical and Electronics Engineering Laboratory	Semester:	I/II
Date of Performance:	/ /20--	Batch No:	C-5(3)
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Faculty Sign & Date:		Grade/Marks:	/20

### Experiment No: 1

**Title: Study of types of Electronic and Electrical components and Instruments.**

#### Aim and Objective of the Experiment:

1. To understand the working principle of various components and Instruments.
2. To understand the applications of various components and Instruments such as Bread Board, Resistors, Capacitors, Inductors, Diodes, Cathode Ray Oscilloscope and Function Generator.

#### COs to be achieved:

- CO1: Analyze resistive networks excited by DC sources using various network theorems.  
CO2: Demonstrate and analyze steady state response of single phase and three phase circuits  
CO4: Explain rectifier-filter circuits using PN junction diode and voltage regulator circuits using Zener diode

#### Theory:

A breadboard is a rectangular plastic board with a bunch of tiny holes in it. These holes let you easily insert electronic components to assemble an electronic circuit, like this one with a battery, switch, resistor, and an LED (light-emitting diode). The connections are not permanent, so it is easy to remove a component if you make a mistake, or just start over and do a new project. Remember that the inside of the breadboard is made up of sets of five metal clips. This means that each set of five holes forming a half-row (columns A-E or columns F-J) is electrically connected. For example, that means hole A1 is electrically connected to holes B1, C1, D1, and E1. It is not connected to hole A2, because that hole is in a different row, with a separate set of metal clips. It is also not connected to holes F1, G1, H1, I1, or J1.

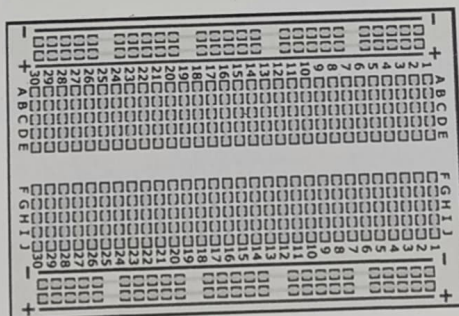


Fig. Bread board

### Observation Table:

Apply a known amplitude and frequency of sine/triangular/square waveform from signal generator and connect it to one of the channels of the CRO for measurement.

**Table 1**

Color code of Resistor/Capacitor	Theoretical Value	Practical Value (DMM)
brown black red gold	$1.0 \times 10^2 \pm 5\%$	$1.0 \times 10^2$
brown green orange red	$1.5 \times 10^3 \pm 5\%$	$1.5 \times 10^3$
blue grey red gold	$6.8 \times 10^2 \pm 5\%$	$6.8 \times 10^2$

**Table 2**

Waveform Nature	Theoretical	Measured frequency (Hz)	Theoretical	Measured amplitude peak to peak (V)
Sine wave	1 kHz	1 kHz	10V	10V
Square wave	1 kHz	1 kHz	10V	10V
Triangular wave	1 kHz	1 kHz	10V	10V

### Post Lab Subjective:

1. State the functions of C.R.O

- CRO  $\rightarrow$  cathode ray oscilloscope
1. displaying waveforms
  2. measuring electrical signals, amplitude & frequency
  3. measuring capacitance & inductance.
  4. comparing signals.

**Conclusion:**

In the experiment we understood the working principal of various components & electrical instruments. We also learned the application of various components such as breadboard, resistor, diode, capacitor, CRO etc.

Signature of faculty in-charge with Date: