Ex.No.6	a) Study of Colour code of resistors
Date:	b) familiarization of breadboard
18-11-2021	c) circuit connection practice using resistors only d) use of DMM

Aim:

To determine the value of resistors by their colour code and to study the usage of breadboard for circuit connections in laboratory.

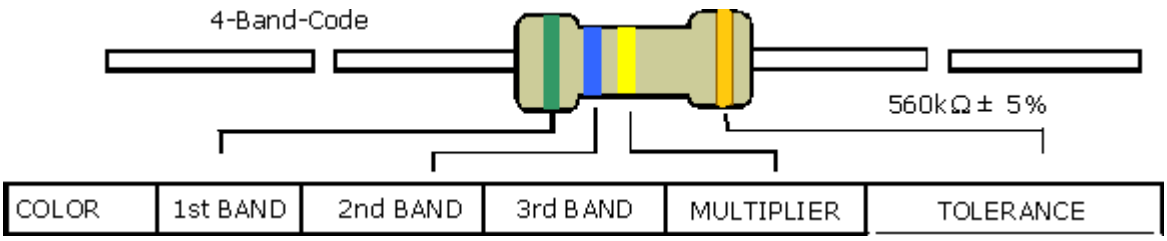
Apparatus

1. Breadboard
2. Set of wires – single strand
3. Set of resistors (any 3 values)
4. Digital Multimeter (DMM)

Theory

Since it is not practical to print the resistance values on the resistors due to its small size, a method called colour coding is adopted. Colour coding is standardized by Electronic Industries Association (EIA). Colored bands are marked at the left end of the resistor to indicate the value of the resistance and another ring at the right end to indicate the tolerance value.
The values of resistors are derived from the standard set of two-digit base numbers. Values are derived by assigning sufficient number of zeros or decimal points to these numbers:
10,12,15,18,22,27,33,39,47,56,68 and 82.

COLOUR	Ist Ring	IInd Ring	IIIrd Ring (multiplier)	IVth Ring (tolerance)
Black	0	0	1	-
Brown	1	1	10	-
Red	2	2	10^2	-
Orange	3	3	10^3	-
Yellow	4	4	10^4	-
Green	5	5	10^5	-
Blue	6	6	10^6	-
Violet	7	7	10^7	-
Gray	8	8	10^8	-
White	9	9	10^9	-
Gold	-	-	-	+ or – 5%
Silver	-	-	-	+ or – 10%



Procedure

1. Hold the resistor such that the colour bands are at the left end of the resistor. Write down the numeric value of the first colour band.
2. Write down the numeric value of the second colour band. Read the numeric value of the third colour band and write down those many zeros at the right side of the first two numerics. This gives the value of the resistor in Ω.
3. Measure the resistance using a multimeter. Compare the theoretical value with this practical value. Repeat the procedure for various resistors.

Reading the value of resistors

Sl. No	Band-1	Band-2	Band-3	Resistance	Multimeter reading
Sample 1	Brown	Black	Red	1 kΩ + or – 5%	0.98 kΩ
Sample 2	Orange	White	Red	3.9 kΩ + or – 5%	3.83 kΩ
Sample 3	Blue	Grey	Red	6.8 kΩ + or – 5%	6.78 kΩ

BREADBOARD

Theory

An electronics breadboard is a **solderless** breadboard. These are units for making temporary circuits and prototyping, and they require absolutely no soldering.

Apart from horizontal rows, breadboards usually have what are called power rails that run vertically along the sides.

These power rails are metal strips that are identical to the ones that run horizontally, except they are, typically, all connected. When building a circuit, we may need power supply connections in number of different places. The power rails give you easy access to power points wherever you need it in your circuit.

Result:
The resistance of resistors measured theoretically are verified successfully by using a Multimeter.

Inferences:
The value of resistors by their colour code are determined and the usage of breadboard for circuit connections in laboratory are studied successfully.

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