Electronics

Electronic Devices Examples

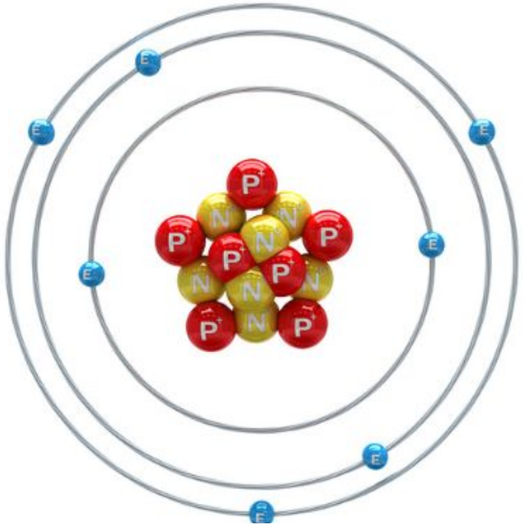
- Cell Phones
- TVs
- Many various tools and appliances

Electronics Definition

- is the field of study focused on the control of electricity and the physical components and circuits that help direct electrical energy.

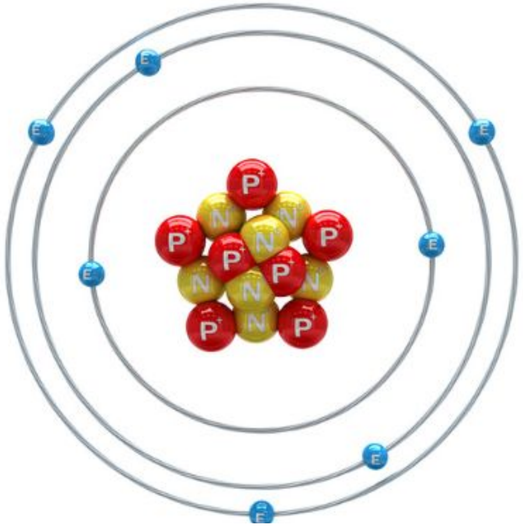
- The word is derived from the word **electron**, which is the source of electric charge.

Definitions (1/5)



- **`Electric current`**
  - It is created from the movement of electrons.
  - Current flows in a closed loop and is constant everywhere in that loop.
- **`Electrons`**
  - along with **protons** and **neutrons** are what make up atoms.
  - The basic charge on an electron is measured in terms of **coulombs**.
  - 1 **coulomb** of charge = the amount of charge carried by 1 ampere in 1 second.

Definitions (2/5)



- **Atoms**
  - are the building blocks of all elements and matter.
  - Electrons carry negative charges and are attracted to the positively charged protons within the nucleus of the atom.
- **Chemical elements**
  - on the periodic table are made up of different types of atoms.
  - The attraction between atoms and their outer electrons is stronger in some elements than in others.

Definitions (3/5)

- **`Electrical conductors`**
  - materials with elements that have a weak attraction between atoms and their electrons
  - In conductive elements, electrons tend to move from atom to atom.
  - **Examples**: metals like copper, gold, and silver.
- **`Electrical insulators`**
  - are materials made up of elements that strongly attract their electrons and in which the electrons never leave the atom.
  - **Examples:** dried wood, glass, and various rubber materials.

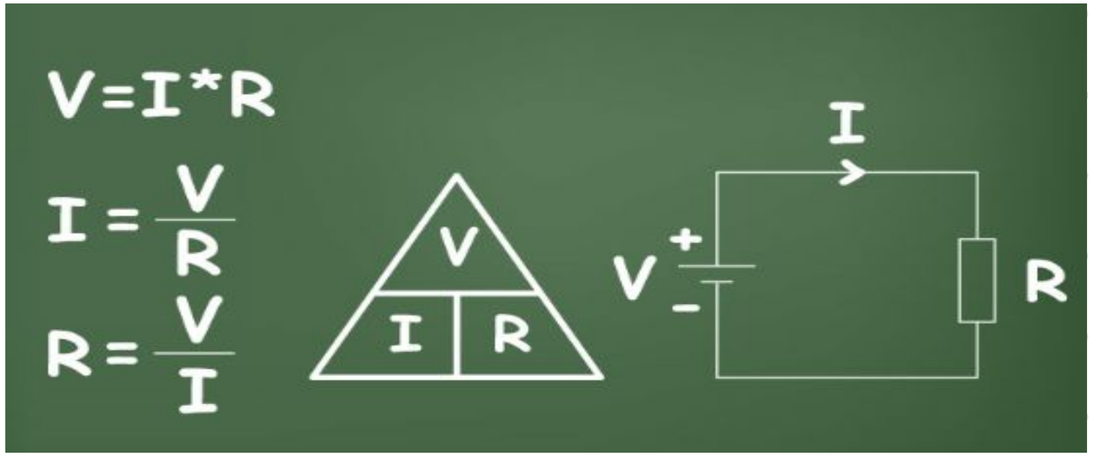
Definitions (4/5)

- **`Voltage`**
  - is the force that drives current.
  - It can also be referred to as electric pressure.
  - is measured as the difference in electric potential energy between two points.
- **`Amperes (Amps)`**
  - measure the strength of electric current.
  - are a measure of the number of electrons in an electric current.
  - 1 ampere per second = 1 coulomb traveling through a circuit in 1 second.
  - This is roughly equivalent to the flow of 6.241509×10^18 electrons per second.

Definitions (5/5)

- **`Power`**
  - is the amount of energy consumed over time.
  - is measured in Watts.
  - **Basic Formulation**: power = voltage x current.
- **`Electrical Circuit`**
  - is a physical network (or model of a physical network) of interconnected electrical components including batteries, resistors, capacitors, inductors, and switches.

Ohm’s Law



- **In the 1800s**
  - Ohm published his theory (known as Ohm’s Law).

- **Ohm’s Law**
  - Voltage is directly proportional to the strength of current multiplied by resistance within a circuit.
  - is a fundamental concept in electronics.

Questions

Links

https://github.com/FCAI-B/iot