

UNIT ONE
ELECTRICITY

READING

1. Read the text and answer the questions.

- a. What is electric charge? What are the types of electric charges?
- b. How does electrical activity manifest itself in the universe?
- c. Is electricity a many-sided form of energy? How does it make our life comfortable?
- d. What are the two forms of electric charge?
- e. What is the difference between positively charged objects and negatively charged objects?
- f. Can an object be uncharged?

Electricity is one of the basic forms of energy. Electricity is associated with electric charge, a property of certain elementary particles such as electrons and protons, two of the basic particles that make up the atoms of all ordinary matter. Electric charges can be stationary, as in static electricity, or moving, as in an electric current.

Electrical activity takes place constantly everywhere in the universe. Electrical forces hold molecules together. The nervous systems of animals work by means of weak electric signals transmitted between neurons (nerve cells). Electricity is generated, transmitted, and converted into heat, light, motion, and other forms of energy through natural processes, as well as by devices built by people.

Electricity is an extremely versatile form of energy. It can be generated in many ways and from many different sources. It can be sent almost instantaneously over long distances. Electricity can also be converted efficiently into other forms of energy, and it can be stored. Because of this versatility, electricity plays a part in nearly every aspect of modern technology. Electricity provides light, heat, and mechanical power. It makes telephones, computers, televisions, and countless other necessities and luxuries possible.

Electricity consists of charges carried by electrons, protons, and other particles. Electric charge comes in two forms: positive and negative. Electrons and protons both carry exactly the same amount of electric charge, but the positive charge of the proton is exactly opposite the negative charge of the electron. If an object has more protons than electrons, it is said to be positively charged; if it has more electrons than protons, it is said to be negatively charged. If an object contains as many protons as electrons, the charges will cancel each other and the object is said to be uncharged, or electrically neutral.

VOCABULARY PRACTICE

1. Match each word from the box with one of the definitions.

neuron charge molecule proton atom energy particle matter electron cell

- a. a very small piece of matter, part of an atom;
- b. the smallest unit, consisting of a group of atoms, into which a substance can be divided without a change in its chemical nature;
- c. a very small piece of matter with a positive electric charge that forms part of the nucleus of an atom;
- d. physical substance in general that everything in the world consists of;
- e. a cell that carries information within the brain and between the brain and other parts of the body;
- f. the smallest part of a chemical element that can take part in a chemical reaction;
- g. the ability of matter or radiation to work because of its mass, movement, electric charge, etc.;
- h. the smallest unit of living matter that can exist on its own;
- i. a very small piece of matter with a negative electric charge, found in all atoms;
- j. the amount of electricity that is carried by a substance.