

BASIC ELECTRICITY

15.1. Vocabulary

Ex. 1. Match the words to their Russian equivalents.

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| 1. current | a. электрическая цепь |
| 2. electricity | b. схема |
| 3. resistance | c. ток |
| 4. voltage | d. проводник |
| 5. conductor | e. ом |
| 6. insulator | f. переменный ток |
| 7. circuit | g. электричество |
| 8. amp | h. постоянный ток |
| 9. ohm | i. ампер |
| 10. capacitance | j. проводимость |
| 11. circuitry | k. напряжение |
| 12. AC | l. магнетизм |
| 13. DC | m. изолятор |
| 14. conductivity | n. емкость |
| 15. magnetism | o. сопротивление |

Ex. 2. *Translate the sentences into English.*

1. Переменный ток используется в большинстве бытовых приборов.
2. Амперы - это измерение величины электрического тока, протекающего по цепи.

3. Емкость батареи определяет, сколько заряда она может удерживать.
4. Для подачи электричества цепь должна быть замкнутой.
5. Схема этого устройства сложна, но, думаю, теперь я ее понимаю.
6. Некоторые материалы обладают более высокой проводимостью и являются лучшими проводниками, чем другие.
7. Медь - очень хороший проводник электричества.
8. Слишком большой ток может привести к повреждению электронных устройств.
9. Постоянный ток используется в батареях для питания портативных устройств.
10. Электричество питает наши дома и помогает облегчить нашу жизнь.
11. Резина является эффективным изолятором и часто используется на электрических шнурах для предотвращения ударов током.
12. Магнетизм - это фундаментальная сила, которая помогает создавать электричество.
13. Ом - это единица измерения сопротивления в цепи.
14. Сопротивление в цепи можно регулировать, добавляя или удаляя компоненты.
15. Напряжение электрической розетки в Соединенных Штатах обычно составляет около 120 вольт.

15.2. Reading

Ex. 1. Read the text.

Basic Electricity

Electricity is a form of energy that can be used in many ways. It is produced by the flow of electric charge, which is usually carried by moving electrons or protons. The energy that these particles carry can be

converted into other forms of energy such as light, heat, or mechanical work.

The movement of electric charge is called an electric current. In most cases, electric current is carried by the electrons in a conductor, such as a metal wire. Electrons are negatively charged, so they move from areas with a higher negative charge to areas with a lower negative charge. This creates a flow of electrons, which we call an electric current.

There are two main types of electric current: direct current (DC) and alternating current (AC). In a DC circuit, the electric current flows in one direction only. This is the type of current produced by batteries, fuel cells, and solar cells. In an AC circuit, the current changes direction periodically. This is the type of current produced by power plants and used in our homes and offices.

The strength of an electric current is measured in amperes (A), or amps for short. One ampere is equal to one coulomb of charge passing a point in a circuit every second. The voltage of a circuit is a measure of the electric potential energy per unit charge. It is measured in volts (V). The resistance of a circuit is a measure of its opposition to the flow of electric current. It is measured in ohms (Ω).

The relationship between current, voltage, and resistance is described by Ohm's law. According to this law, the current in a circuit is equal to the voltage divided by the resistance. Mathematically, this can be written as $I = V/R$, where I is the current in amperes, V is the voltage in volts, and R is the resistance in ohms.

In addition to current, voltage, and resistance, there are several other important concepts in the study of electricity. These include capacitance, which is a measure of a capacitor's ability to store electric charge; inductance, which is a measure of an inductor's ability to store magnetic energy; and conductance, which is the reciprocal of resistance and measures a material's ability to conduct electric current.

Understanding the basic principles of electricity is important for many aspects of modern life, from powering our homes and devices to developing new technologies. By studying the behavior of electric charge and learning how to manipulate it, scientists and engineers have been able

to make significant advances in fields such as electronics, telecommunications, and renewable energy.

Ex. 2. *Answer the questions.*

1. How is electricity produced and what can it be converted into?
2. What is an electric current and how is it carried in most cases?
3. What are the two main types of electric current and where are they commonly produced and used?
4. How is the strength of an electric current measured, and what does it represent?
5. What is the relationship between current, voltage, and resistance according to Ohm's law?
6. Besides current, voltage, and resistance, what are some other important concepts in the study of electricity?
7. Why is understanding the basic principles of electricity important in modern life?

15.3. Communication

Ex. 1. *Make sentences using the following words:*

1. light / switch / work
2. explain / difference / AC
3. turn / on / fan
4. purpose / circuit / breaker
5. change / batteries / remote
6. phone / won't / charge
7. electrocuted / before
8. plug / in / vacuum
9. wire / light / fixture
10. safe / touch / live / wire

