**Хасаншин Ильшат ЭХПм-1-24**

**Задания к тексту Electricity (history)**

**Exercise 1**

1. **Otto von Guericke** (a German physicist)

2. **Charles Fransois de Cisternay Du Fay** (a French scientist)

3. **Benjamin Franklin** (an American scientist)

4. **Joseph Priestley** is famous for experimentally proving the law that the force between electric charges varies inversely with the square of the distance between the charges. He also demonstrated that an electric charge distributes itself uniformly over the surface of a hollow metal sphere, and that no charge and no electric field of force exists within such a sphere.

5. **Michael Faraday** (a British scientist)

6. **Luigi Galvani** produced muscle contraction in the legs of frogs by applying an electric current to them. **Alessandro Volta** announced the first artificial electrochemical source of potential difference, a form of electric battery.

7. **Yes**, it does.

8. **Hans Christian Oersted** (a Danish scientist)

9. **Yes**, they do.

10. **James Prescott Joule** and **Hermann Ludwig Ferdinand von Helmholtz**

11) **James Clerk Maxwell** investigated the properties of electromagnetic waves and light and developed the theory that the two are identical. His work paved the way for the German physicist **Heinrich Rudolf Hertz** who produced and detected electric waves in the atmosphere in 1886.

12) The widespread use of electricity as a source of power is largely due to the work of such pioneering American engineers and inventors as **Thomas Alva Edison, Nikola Tesla, and Charles Proteus Steinmetz.**

**Exercise 2**

**Электрический заряд** - electric charge

**Два различных типа** - two different types

**Положительный** - positive

**Отрицательный** - negative

**Эксперимент** - experiment

**Исследования в области электричества** - electrical research

**Атмосферное электричество** - atmospheric electricity

**Молния** - lightning

**Электростатический заряд** - electrostatic charge

**Избыток** - excess

**Недостаток** - shortage

**Сила** - force

**Квадрат расстояния** - square of the distance

**Распределять** - distribute

**Измерять** - measure

**Наблюдения** – observations

**Теория электрических линий** - theory of electric lines

**Искусственный** - artificial

**Электрохимический источник** - electrochemical source

**Электрические волны** - electric waves

**Теория электронов** - electron theory

**Основа современной электрической теории** - the basis of modern electrical theory

**Exercise 3**

1. с

2. b

1. a

4. b

5. b

1. c

1. b

**Exercise 4**

1. There are **two different types of charge**: **positive** and **negative**.

2. **Atmospheric electricity** is responsible for the **phenomena** of **lightning** and **thunder**.

3. **Electricity** **distributes** itself **uniformly over the surface** of a conductor.

4. Scientists **conduct experiments** to study the **flow of electric current**.

5. **Faraday** made significant **contributions** to the **study of electricity** in the 19th century.

6. **Electricity** is a **form of energy**.

7. The **electron theory** is the **basis** of **modern electrical theory**.

8. The **widespread use of electricity as a source of power** is a result of the work of many pioneers.

**Exercise 5**

1. **There are two types of electric charges: positive and negative.**

2. **His experiments proved that atmospheric electricity, which causes the phenomena of lightning and thunder, is identical to the electrostatic charge on a Leyden jar.**

3. **The force between electric charges varies inversely with the square of the distance between the charges.**

4. **This scientist made a significant contribution to the development of the study of electricity.**

5. **Electricity is a form of energy.**

6. **Electric circuits obey the laws of conservation of energy.**

7. **The properties of electromagnetic waves.**

8. **The widespread use of electricity as a source of power began in the early 20th century.**

**Задания к тексту Current Electricity**

**Exercise 1**

1. Yes, the charges neutralize each other if two equally and oppositely charged bodies are connected by a metallic conductor.

2. This neutralization is accomplished by means of a flow of electrons.

3. Electrons will flow from the point of lowest potential to the point of highest potential in any continuous system of conductors.

4. If the current flows continuously in one direction, it is called direct current (DC).

5. If the current flows alternately in either direction, it is called alternating current (AC).

6. The electromotive force (emf) or voltage is the potential difference in the circuit.

7. The quantity usually given in terms of the ampere is the rate of current flow.

8. The unit used for expressing the quantity of resistance is the ohm (Ω).

9. Ohm's law describes the relationship between voltage (E), current (I), and resistance (R), often stated as E = I x R or I = E/R.

10. When an electric current flows through a wire, two important effects can be observed: the temperature of the wire is raised, and a magnet or compass needle placed near the wire will be deflected.

1. The amount of energy expended in an electric circuit is expressed in terms of the joule.

**Exercise 2**

Противоположно заряженный — oppositely charged

Металлический проводник — metallic conductor

Заряд — charge

Поток электронов — flow of electrons

Проводник — conductor

Электротехника — electrical engineering

Непрерывная система — continuous system

Низший потенциал — lowest potential

Высший потенциал — highest potential

Электрический ток — electric current

Ампер — ampere (amp)

Соответствовать — correspond

Сопротивление — resistance

Обычные условия — ordinary conditions

Закон Ома — Ohm's law

Уравнение — equation

Формулировка — formulation

Температура проволоки — temperature of the wire

Атомы — atoms

Измерять — measure

**Exercise 3**

1. Charged bodies are connected by a metallic conductor to neutralize each other.

2. In electrical engineering, the current flows from the positive to the negative in the opposite direction.

3. The second rate of current flow is essential for understanding electrical systems.

4. The resistance in a circuit necessarily limits the flow of current.

5. Ohm's law can be stated in the form of an equation that relates voltage, current, and resistance.

6. The electrons collide with the atoms of the conductor, transferring energy in the process.

7. The amount of energy expended in an electric circuit is measured in joules.

8. A compass needle placed near a wire will be deflected, acting like a small magnet.

**Exercise 4**

1. Equally and oppositely charged bodies are connected to each other by a metallic conductor.

2. The flow of electrons from the negatively charged body to the positively charged body. 3. The flow of electrons from the point of lowest potential to the point of highest potential.

4. The resistance in the circuit limits the magnitude of the current.

5. Ohm's law can be expressed in the form of the following algebraic equation.

6. When an electric current flows through a wire, the temperature of the wire increases.

7. When the electrons of the current collide with the atoms of the conductor, energy is produced.

8. The needle of a compass placed near the wire will be deflected in a direction perpendicular to the wire.