**Прочитайте, а затем письменно переведите 1, 2, 3 абзацы текста.**

**Resistance**

l.In everyday conversation the word “resistance” is, generally, used to mean

anything that tends to oppose motion.

2.If a tram is running at a uniform speed along straight rails fric

tion tends to

reduce the speed of the tram, opposing its motion. Likewise, resistance tends to

reduce the flow of electric current.

The power expended in maintaining the current through resistance is

transformed into heat. That is why, heat develops in a metallic conductor, whenever current flows. The amount of heat developed when the current is flowing through the

conductor is the measure of the ohmic resistance of the conductor.

3.When an electric current flows through a resistance, there is a loss of energy as well as a loss of voltage or electric pressure and both these losses are directly proportional to the amount of resistance.

4.The larger the diameter of the wire, the smaller the resistance is and, hence, the more current will flow through it. This relationship between current, strength and the cross-sectional area of a conductor was first established by Petroff, our first Russian electrician.

5.As a rule, if the length of a conductor is doubled, the resistance is doubled and if its cross-sectional area is doubled, its resistance is halved.

II.**Найдите в тексте ответы на следующие вопросы:**

**1.**What happens with the resistance if the diameter of the wire becomes larger?

- **2**.Who established the relationship between current, strength and the cross-sectional area of a conductor?

**III.Найдите в тексте производные от следующих слов, выпишите их,**

**переведите на русский язык, укажите часть речи:**

**1.**resist

2.general

3.oppose

4.conduct

5.volt

6.proportion

7.press

8.direct

IV.**Перепишите и переведите на русский язык следующие предложения.**

**Подчеркните инфинитив и определите его функцию:**

1.To charge an object by induction, you have to hold a charged body at some distance near the object to be charged.

2.We use these lines of force in order to picture the electric field more clearly.

3.То analyze this effect is to give due considerations to all the elements.

4.To find an instrument better suited for our testing was the next problem to be faced.

V.**Перепишите и переведите следующие предложения.**

**Подчеркните причастия 1 и 2 и определите их функции**:

1.The measurement of electrical energy is usually expressed in watt hours.

2.Using ohm’s Low and the low of the force of interaction

between the magnet and the current, we can make very simple instruments

3.The deflection is measured by means of a pointer atta

ched to the armature.

4.In this chapter we shall discuss the important effects accompanying the motion of electric charge.

VI.**Перепишите и переведите следующие предложения на русский язык,**

**подчеркните герундий:**

1.Comparing the performance of these instruments is the only means of solving the problem under discussion.

2.Any of the above-mentioned effects may be used for detecting and measuring current.

3.In this work the scientist described in detail the methods of constructing and using a battery.

4.The power expended in maintaining the current through resistance is transformed into heat.

VII.**Перепишите и переведите следующие предложения с конструкцией**

it is (was) ... that (who, which):

1.It is to this invention that we owe the development of modern electrical science and industry.

2.It is this electron stream towards the positive electrode that represents the electric current.

3.It was Benjamin Franklin who was the first to find, the defense against the destructive action of lightning

**TEXT ELECTRIC CIRCUIT** The electric circuit is the subject to be dealt with in the present article. But what does the above term really mean? We know the circuit to be a complete path which carries the current from the source of supply to the load and then carries it again from the load back to the source.  
 The purpose of the electrical source is to produce the necessary electromotive force required for the flow of current through the circuit.  
The path along which the electrons travel must be complete otherwise no electric power can be supplied from the source to the load. Thus we close the circuit when we switch on our electric lamp.  
 If the circuit is broken or, as we generally say "opened" anywhere, the current is known to stop everywhere. Hence, we break the circuit when we switch off our electrical devices. Generally speaking, the current may pass through solid conductors, liquids, gases, vacuum, or any combination of these. It may flow in turn over transmission lines from power-stations through transformers, cables and switches, through lamps, heaters, motors and so on.  
 There are various kinds of electric circuits such as: open circuits, closed circuits, series circuits, parallel circuits and short circuits.  
 To understand the difference between the following circuit connections is not difficult at all. When electrical devices are connected so that the current flows from one device to another, they are said to be connected in series. Under such conditions the current flow is the same in all parts of the circuit, as there is only a single path along which it may flow. The electrical bell circuit is considered to be a typical example of a series circuit. The parallel circuit provides two or more paths for the passage of current. The circuit is divided in such a way that part of the current flows through one path, and part through another. The lamps in your room and your house are generally connected in parallel.  
 Now we shall turn our attention to the short circuit sometimes called "the short". The short circuit is produced when the current is allowed to return to the source of supply without control and without doing the work that we want it to do. The short circuit often results from cable fault or wire fault. Under certain conditions, the short may cause fire because the current flows where it was not supposed to flow. If the current flow is too great a fuse is to be used as a safety device to stop the current flow.  
  The fuse must be placed in every circuit where there is a danger of overloading the line. Then all the current to be sent will pass through the fuse.  
When a short circuit or an overload causes more current to flow than the carrying capacity of the wire, the wire becomes hot and sets fire to the insulation. If the flow of current is greater than the carrying capacity of the fuse, the fuse melts and opens the circuit.

**II. Guess the meaning of the following international words:**

concept, potential, electrostatic generator, aluminum, parallel, typical, control.

III**. Give the English equivalents for the following words and word combinations:**

1) электрические цепи, 2) электрический заряд, 3) проводник, 4) сопротивление, 5) движение электронов, 6) изолятор, 7) короткое замыкание, 8) энергия.

IV**. Say whether these sentences are true or false:**

1. When an extended conductor has the same potential at its ends, free electrons are drifting from one end to another.

2. The wire and the electric source together form an electric circuit.

3. A path of any material will allow current to exist.

4. Silver, copper and gold oppose very strongly.

5. The slighter the opposition is, the better the insulator is.

6. There is only one type of electric circuit.

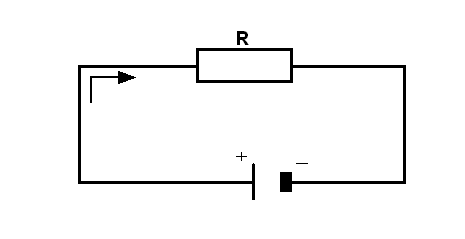
7. We close the circuit when we switch on our electric device.

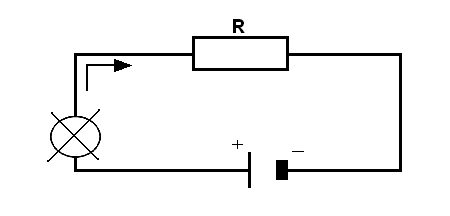
**Electric circuit.**

This is a circuit. It is elements are a voltage source, a resistor and a conductor. The circuit consists of a voltage source, a resistor and a conductor. A voltage source supplies current. A resistor reduces current. A conductor connects the elements of the circuit. Compare circuit **a** with circuit “**b**”.

What is the difference between them? Circuit passes through circuit “**a**” while no current passes through circuit “**b**”. Circuit “**b**” has an open.

No current through circuit “**b**” results from an open. An open and a short are troubles in a circuit.

Fig 1 Т4 а) 

b)

Complete these sentences, using the correct variant:

1. Circuit a consists of

a) resistors and conductors.

b) a voltage source and resistors.

c) a voltage source, a resistor and a conductor.

2. A voltage source

a) conducts current.

b) reduces current.

c) supplies current.

3. A conductor

a) connects the elements.

b) supplies voltage.

c) conducts current.

4. A resistor

a) connects the elements.

b) supplies current.

c) reduces current.

5. No current results from

a) an open.

b) a short.

**Solve these problems:**1. How much is the current in the circuit if a 60-volt course is connected to a resistance of 1,600 ohms?

2. How much is the voltage in a circuit having a current equal to 20 amp, if a 25-ohm resistance is connected to it?

3. A 70.35-ohm resistance is connected to the circuit. How much is the voltage if he current equals 4.5 amp?