**Практическое занятие № 14**

**Тема:  Электричество.**

***Прочитайте текст и выполните послетекстовые задания:***

**CIRCUIT ELEMENTS**

Current moves from a point of high potential to one of low potential. It can only do so if there is a path for it to follow. This path is called an electric circuit. All circuits contain four elements; a source, a load, a transmission system and a control.

 The source provides the electromotive force. This establishes the difference 01 potential, which makes current flow possible. The source can be any device, which supplies electrical energy. For example, it may be a generator or a battery.

 The load converts the electrical energy from the source: into some other form of energy. For instance, a lamp changes electrical energy into light and heat. The load can be any electrical device.

 The transmission system conducts the current round the circuit. Any conductor can be part of a transmission system. Most systems consist of wires.

 The control regulates the current flow in the circuit. It may control the current by limiting it, as does the rheostat, or by interrupting it, as does a switch.



 Study Fig. 1. In this simple flashlight (карманный фонарик) source comprises three 1,5 V cells in series. The load is 0,3 bulb. Part of the transmission system is the metal body of the flashlight and the control is a sliding (peoстат).



 Compare Fig.2. The function of this circuit is to operate a television camera aboard a space satellite. Here the source is a battery of solar cells. A solar cell is an electric cell, which converts sunlight into electrical energy. The load is the television camera. The transmission system is the connecting wires. The control is a relay actuated by transmissions from ground control. Although the function of this circuit is much more complex than that of the flashlight, it too consists of the four basic elements.

**Задание 1. Прочтите 1 абзац текста, определите значение слова *ONE.***

**Задание 2. Найдите в тексте ответ на следующие вопросы:**

1. What circuit is shown in Fig. 1?
2. What is the function of the circuit shown in Fig. 2?
3. What are the basic elements of this circuit?

**Задание 3. Переведите текст на русский язык.**

**Задание 4. Замените подчеркнутые слова синонимами из текста.**

1. Current flows from a point of high potential to one of low potential. It can only do so if there is way for it to follow. 2. All circuits consist of four elements. 3. The source supplies electrical energy. 4. The load changes electrical energy from the source into some other form of energy. 5. The control controls the current flow in the circuit. 6. The source in the circuit shown in Fig. 1 consists of three cells connected in series. 7. The control shown in Fig. 2 is a relay operated by ground control.

**Грамматика. Страдательный залог**

**Задание 5. Найдите в тексте предложения, в которых сказуемое стоит в страдательном залоге.**

**Задание 6. Переведите письменно следующие предложения, обращая внимание на глаголы-сказуемые в страдательном залоге.**

1. The connection between magnetism and electricity was first investigated in 1819.  2. A conductor that is carrying current is surrounded by a magnetic field. 3. When a circuit is switched on current is flowing through it. When it is switched off the flow of current is stopped. 4. A switch is used in almost every piece of electrical apparatus. 5. Materials having a low resistance are called conductors. 6. New types of lasers are much written about. 7. The resistance of conductors is affected by temperature. 8. In a two-winding transformer the primary winding is followed by the secondary winding.

**Задание 7. Выберите правильную форму глагола в скобках  (Действительный залог или страдательный залог)**

1. A great number of scientists (were investigating/were investigated) the properties of semiconductors for many years. 2. When the circuit (opens/is open) current is not passing. 3. These devices are coming increasingly popular and (are being used/are using) more extensively. 4. Studies of photoelectric effect (carried out/were carried out) in science centers throughout the world. 5.  Electrons are attracted by a positive charge and repelled by a negative charge.

**Практическое занятие № 15**

**Тема: Электричество.**

***Прочитайте текст и выполните послетекстовые задания:***

**CONDUCTORS, INSULATORS AND SEMICONDUCTORS**

 In most cases, an electric current is described as a flow of electric charges along a conductor. **Not all substances are good conductors of electricity, as a general metals are good conductors of electricity, whereas nonmetals are poor conductors.** So all materials can be classified into three groups according to how readily they permit an electric current to flow. These are: conductors, insulators and semiconductors,

 In the first category are substances, which provide an easy path for an electric current. **All metals are conductors, however some metals do not conduct well.** Manganin (манганин), for example, is a poor conductor. **Copper is a good conductor, therefore it is widely used for cables.** A non-metal, which conducts well, is carbon. Salt water is an example of a liquid conductor.

 **A material, which does not easily release electrons, is called an insulator**. Rubber, nylon, porcelain (фарфор) and air are all insulators. There are no perfect insulators. All insulators will allow some flow of electrons, however this can usually be ignored.

 Semiconductors are midway (промежуточное положение) between conductors and insulators. **Under certain conditions they allow a current to flow easily but under others they behave as insulators.** Germanium and silicon are semiconductors Mixtures of certain metallic oxides also act as semiconductors. These are known as thermistors. The resistance of thermistors falls rapidly as their temperature rises. They are therefore used in temperature sensing devices.

**Задание 1. А) Найдите в тексте перевод следующих терминов:** полупроводник, изолятор, плохой проводник, позволять, неметаллы, вести себя, резина, кремний, германий, термистор, сопротивление, обеспечивать (предоставлять), путь, однако, следовательно, условие, согласно чего-л, электрический заряд, случай.

**В) Переведите следующие термины на русский язык:** conductor, semiconductor, insulator, allow, silicon, copper, permit, substance, according to.

**Задание 2. Переведите на русский язык выделенные предложения.**

**Задание 3. Прочтите текст, найдите ответ на следующие вопросы:**

What materials are called conductors? Do all metals conduct well? What metal is a poor conductor? Why is copper widely used for cables? What substance is an example of а liquid conductor? What materials are called insulators? What insulators are mentioned in the text? Do insulators allow any flow of electrons?

**Задание 4. Замените подчеркнутые слова синонимами из текста.**

1. The flow of free electrons is an electric current. 2*.* Materials in the first group are called conductors. 3. Materials, which provide a path for an electric current, are conductors. 4. All insulators permit some flow of electrons, 5. Germanium sometimes acts as an insulator and sometimes as a conductor.

**Грамматика. Причастие I**

|  |  |  |
| --- | --- | --- |
|  | Active |  Passive |
| **Participle I**  | drilling | being drilled       |
| **Participle II** | **-** | drilled |
| **Perfect Participle** | having drilled | having been drilled |

***The man sitting at the table is our teacher****. — Человек, сидящий за столом — наш учитель.*

***Going home I met an old friend.*** *— Идя домой, я встретил старого друга.*

***Having finished work I went home. —****Закончив работу, я пошел домой.*

***Having solved the problem correctly they changed the answer. -*** *Решив пример правильно, они поменяли ответ.*

**Задание 5. Переведите словосочетания с причастием I**

*Participle I:* Computers using superconducting material; the machine calculating mathematical problems; students coding the information