**Тема:**  «Вычисления по формуле. Цепи постоянного тока. Закон Ома»

**Цель:** Повторить грамматический материал , продолжить изучать лексическую тему «электротехника».

**Задачи:** Отработать навык работы (в т.ч. перевода) с профессиональной лексикой по теме «электричество», повторить тематический материал, актуализировать имеющиеся знания.

**Специальность:** 13.02.09 Монтаж эксплуатации линий электропередачи, 13.02.11 Техническая эксплуатация и обслуживание электрического и электромеханического оборудования (по отраслям)

**Время выполнения:** 180 минут

1. **Study the new words.**
2. **Read the text.**
3. **Do the tasks.**

**It’s all about resistance\***

*A battery provides the voltage that makes the current flow, provided there is a complete path of conductive material, like copper wire, from one terminal of the battery to the other.* *The wiring provides such a path, which completes the circuit. If there is no wire, or if the wire does not return to the other terminal, then it is an incomplete circuit*. In addition to a battery and a lamp, the circuit also has a resistor. The function of the resistor is to limit the amount of current flowing through the circuit. *Without it, the only factors limiting the current are the size of the copper wire, the resistance of the lamp filament, and the voltage of the battery.* If the circuit resistance is too low, a very large current will flow and the wire and lamp filament will heat up, possibly to the point of destruction. The resistor prevents that from happening. The load in this case is a lamp, but it might just as easily be a fog machine or anything that uses electricity.

**Ohm’s Law**

Ohm’s law is one of the most important and useful fundamental relationships in electricity and electronics. If you have a good understanding of what it means and how to use it, then you will have taken a large step toward demystifying electricity and electronics. Much of what we will learn is based on Ohm’s law and its derivations. *Ohm’s law describes the relationship between voltage, current, and resistance. It simply says that voltage is the product of current and resistance.*

**V = IR, I = V/R, and R= V/I**. The V is always at the top.

What this tells us is that for a given resistance, the current is directly proportional to the voltage: the higher the voltage, the higher the current and vice versa. Alternatively, for a given voltage, the current is inversely proportional to the resistance in a circuit: the higher the resistance, the lower the value of the current.

1. **Translate the lines given in italics.**
2. **Find equivalents for the followings:**
3. Своеобразный проводник
4. Мощность батареи
5. Допустимый предел
6. Предотвратить
7. Работать от электричества
8. Приблизиться к
9. **Answer the following questions:**
10. What is the voltage needed to produce 2 amps in a 100-ohm resistor?
11. In a 12-volt DC circuit, how much current would flow through a 150-ohm resistor?
12. What is the resistance of a cable that allows 10 amps to flow through it when a 24-volt battery is applied to it?
13. In a 24-volt circuit, a lamp draws 6.25 amps. What is the effective resistance of the lamp?
14. A 12-volt circuit has a 3-amp fuse. How much resistance is required to keep the fuse from blowing?
15. **Decide if the statement is true or false (according to your knowledge):**

1. A coulomb is a quantity measurement of electrons.

2. The definition of an amp (A) is one coulomb per second.

3. The letters V, which stands for intensity of current flow, or A, which stands for amps, are often used in Ohm’s Law formulas.

4. Resistance is referred to as electrical pressure, potential difference, or electromotive force. The letters E and V are used to represent voltage in Ohm’s Law formulas.

5. An ohm is a measurement of resistance (R) in an electrical circuit. The letter R is used to represent Ohm’s Law formulas.

6. The watt (W) is a measurement of resistance in an electrical circuit. It is represented by the letters W or P (power) in Ohm’s Law formulas.

7. Before current can flow, there must be a compete circuit.

8. A short circuit has little or no resistance.

9. Capasitors are used in two main applications: as voltage dividers and to limit the flow of current in a circuit.

10. The value of a fixed resistor can be changed.

11. There are several types of fixed resistors, such as composition carbon, metal film, and wire wound.

1. **Fill in the gaps, use your glossary:**
2. You’d better use some well-isolated wires, as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in this circuit is 350 V.
3. Look! The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and isolation as well are violated, I guess, the arc-blast may happen!
4. There is some rust on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, that is why current can’t reach the load.
5. Check the light, please, I have already changed the light bulb! – Well, I’m afraid, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has burnt again. Probably it’s because of short circuits.
6. What is the difference between the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and the impedance? Impedance is a complete, summary volume of Ohms of a circuit.
7. If you know Ohm’s law well, you can easily get \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of it’s law.

1. A coulomb is a quantity measurement of electrons.

2. The definition of an amp (A) is one coulomb per second.

3. The letters I, which stands for intensity of current flow, or A, which stands for amps, are often used in Ohm’s Law formulas.

4. Voltage is referred to as electrical pressure, potential difference, or electromotive force. The letters E and V are used to represent voltage in Ohm’s Law formulas.

5. An ohm () is a measurement of resistance (R) in an electrical circuit. The letter R is used to represent Ohm’s Law formulas.

6. The watt (W) is a measurement of power in an electrical circuit. It is represented by the letters W or P (power) in Ohm’s Law formulas.

7. Before current can flow, there must be a compete circuit.

8. A short circuit has little or no resistance.

9. Resistors are used in two main applications: as voltage dividers and to limit the flow of current in a circuit.

10. The value of a fixed resistor cannot be changed.

11. There are several types of fixed resistors, such as composition carbon, metal film, and wire wound.