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**National Aviation University**

Institute (Faculty) Educational and Research Institute of Air Navigation

Department Aviation English

Field of Study6.051103 Avionics

Subject “Foreign Language” (for Professional Purposes)

**Complex TEST**

**VARIANT № \_\_\_1\_\_**

**Electricity, electrons and conductors**

When you plug in the coffee maker in the morning, you’re using electricity. When you flip on the TV to watch your favourite film you’re using electricity again (for better or worse). You use electricity and electronics devices all the time. Like most things in life, electricity is more complex than you may think. A lot of conditions have to come together to make that little spark when you touch a doorknob or provide the power to run a supercomputer. To understand how electricity works, it helps to break it down into its parts. Let’s have a look at electrons first.

Electrons are one of the building blocks of nature. Electrons are buddies with another of nature’s building blocks, protons. Electrons and protons are very small and are contained in . . . well, everything. A speck of dust contains millions and millions of electrons and protons. Electrons and protons have equal and opposite electric charges, with electrons having the negative charge and protons the positive. Opposite charges are attracted to each other. You can visualize a similar type of attraction by putting the ends of two magnets together. If the ends of the magnets are opposite poles, the magnets cozy right up to each other and stick together. If the ends of the magnets are the same pole, the magnets will move apart like two politicians in a heated debate. In a similar way, because electrons and protons have opposite charges, they are attracted to each other just as you can see opposite magnetic poles attracting. The attraction between electrons and protons acts like glue on a microscopic scale, holding matter together.

Although protons stay reasonably static, electrons are adventurous little fellows who don’t like to just sit around at home. They can, and often do, move from one object to another. Lightning is another example of electrons traveling between two things — in this case, between a cloud and the ground. These examples both show electricity in an unharnessed state.

Electricity is simply the movement of electrons through a conductor. A lot of materials can act as conductors, but some are much better at it than others. Electrons can move more easily through metal than through plastic. Most folks use copper and aluminum as conductors. In fact, electronics projects often use copper wire conductors. Plastic and glass are commonly used insulators.

Resistance is the measurement of the ability of electrons to move through a material. A copper wire with a large diameter has lower resistance to the flow of electrons than a copper wire with a small diameter.

1. **Answer the following questions.**
2. What materials are good conductors and what are good insulators?
3. What is resistance?
4. How do protons and electrons differ from one another?

2. **Find the words in the text which mean the following.**

a small flash of light (par.1), a tiny spot (par. 2), lacking in movement, action, or change, especially(par. 3).

**3. Write down the essay (approximately 15 sentences) “What`s the role of electricity in today`s world?”**

**Head of the Department**

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