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**II. Прочитайте текст и переведите выделенный отрывок.**

**Text: “Energy”.**

Energy can be defined as the ability to do work. Physicists classify energy into several types: kinetic, potential, heat, sound, radiant energy (light, for example), and electrical, chemical, and nuclear energy.

Kinetic energy is possessed by a moving object by virtue of its motion. It equals the work done to accelerate the object to a particular velocity; it also equals the work done to bring a moving object to rest. The two principal forms of kinetic energy are known as translational and rotational. The first is possessed by an object moving from one position to another. The second is possessed by rotating objects, which revolve about an axis and therefore periodically return to the same position.

An object has potential energy by virtue of its position. Two common types are gravitational and elastic potential energy.

**An object possesses heat, or thermal, energy by virtue of its temperature. It is, in fact, merely a form of kinetic energy, because the temperature of a substance depends on the motion of its component atoms or molecules; the higher its temperature, the faster the molecules move.**

**Radiant energy consists of electromagnetic radiation and includes radio waves, visible light, ultraviolet and infrared radiation, and X rays. The only form of energy that can exist in the absence of matter, it consists of a wave motion in electric and magnetic fields. Radiant energy is emitted when electrons within atoms fall from a higher to a lower energy level and release the “excess” energy as radiation.**

**Sound energy consists of moving waves of pressure in a medium such as air, water, or metal. They consist of vibrations in the molecules of the medium.**

**Matter that has gained or lost some electric charge has electrical energy. The movement of charges constitutes an electric current, which flows between two objects at different potentials when they are joined by a conductor.**

**Chemical energy is possessed by substances that undergo a chemical reaction, such as combustion. It is stored in the chemical bonds between the atoms that make up the molecules of a substance.**

**Nuclear energy is produced when the nuclei of atoms change, either by splitting apart or joining together. The splitting process is known as nuclear fission, the joining together as nuclear fusion. Such changes can be accompanied by the release of enormous amounts of energy in the form of heat, light, and radioactivity (the emission of atomic particles or gamma radiation, or both).**

When an object loses or gains one type of energy, another kind is correspondingly gained or lost. The total amount of energy, possessed by an object, remains the same. This phenomenon is the principle of conservation of energy, which states, that energy can neither be created nor destroyed, but only converted into other forms.

If mass and energy are considered together, the total amount of mass and energy remains the same. Consequently the principle of mass conservation has been modified into what is called the principle of conservation of mass-energy. The Theory of Relativity shows that mass and energy can be considered to be totally interconvertible, and the amount of energy produced, when matter is destroyed, is given by the well-known equation *E = mc2* (*E* is the energy released, *m* is the mass destroyed, and *c* is the velocity of light).

The transmission of energy. Energy is often transmitted by wave motions, and for this reason the study of waves is of crucial importance in physics – from the wave mechanics of the atom to the study of gravitational waves produced by black holes. In general, a travelling wave is the movement of a disturbance from a source, and energy is transported as the disturbance moves outwards.

If the disturbance produced is parallel to the direction of energy travel, the wave is said to be longitudinal; sound waves are of this type. If the disturbance is perpendicular to the direction of energy travel – as in electromagnetic radiation and waves on the surface of water – then the wave is transverse.

Four properties of a wave can be distinguished and described mathematically: wavelength, frequency, velocity, and amplitude.

**III. Найдите существительные в каждой строке и переведите**

a) Electric, heat, consist, undergo, transverse;

b) Frequency, normal, consequently, include, modify;

c) Interconvertible, possess, thermal, wavelength, define;

d) Longitudinal, mathematically, outwards, multiply, equation;

e) Disturbance, abnormal, merely, emit, enormous;

f) Accelerate, particular, rotational, axis, invisible;

g) Translation, revolve, periodically, uncommon, conductor.

Найдите предложения с данными выражениями и запишите их.

.  Physicists classify energy into several types: kinetic, potential, heat, sound, radiant, electrical, chemical and nuclear energy.

1. physical science into several fields: mechanics, sound, heat, electricity, etc.

2. particles into several types: electrons, protons, neutrons, etc.

3. states of matter into several types: solid, liquid, gas, plasma

4. solids into two types: “true” and amorphous

5. substances in solution into two types: crystalloids and colloids

6. motion into different types: linear, circular and simple harmonic motion