JAF02 Unit 4 Energy

Task 1 Speaking

Study the collocation of the word "energy". In pairs, discuss your associations. Brainstorm other ideas.

Inexhaustible surplus renewable creative burst of

be full of to lack to direct to channel to save to waste to work off

ENERGY

production demands resources prices shortage

Task 2 Energy and machines

Match the beginnings and endings of the sentences

1. Energy is the ability…
2. Kinetic energy and potential energy are the two basic forms…
3. The principle of the conservation of energy states…
4. Nuclear fission is the splitting…
5. Nuclear fusion involves combining…
6. Collisions may be either elastic…
7. A machine is any device…
8. The efficiency of a machine is reduced

a) or inelastic.
b) two or more small nuclei to produce energy.
c) of energy.
d) that increases the effect of a force.
e) to do work.
f) by friction between moving parts.
g) of the nucleus of an atom and produces large amounts of energy.
h) that energy can neither be created or destroyed but can be converted from one form to another.

Task 3 The many forms of energy

Complete the gaps with suitable words.

Energy is the ability to do work. When a hammer strikes a nail, it _____ a force on the nail that causes it to move. The movement of the hammer has the ability to do work and _____ has a form of energy that we call kinetic energy. Kinetic energy is the energy of _____ .

An object may have energy not only because of its motion but also because of its _____ or shape. For example, when a watch spring is wound, it is storing energy. When this energy is _____, it will do the work of moving the hands of the watch. This form of energy is called the potential energy. Potential energy is _____ energy. Water in a dam is another example of potential energy.

There are many types of kinetic and potential energy, including chemical, thermal, mechanical, electrical, and nuclear energy. Chemical energy is _____ energy that is stored in gasoline, food, and oil. Thermal energy may be defined as the kinetic energy of molecules. When a substance is _____, the molecules move faster, which causes the substance to feel hot. Mechanical energy is energy _____ to the movement of objects. Electric energy is energy that is produced by electric _____ . Nuclear energy is the energy that is stored in the _____ of certain kinds of atoms, like uranium.

Task 4 Energy conversion

Can you deduce the series of energy changes that occur when a carpenter hammers a nail into a piece of wood?

What energy does the carpenter have in his/her body before beginning to work?

What energy is present in the raised hammer?

As the carpenter moves the hammer down to the nail, what form of energy will the moving hammer have?

What happens when the hammer hits the nail?

Using English to define

Aristotle suggested that a good definition should include the general classification of a term plus the specific characteristics that differentiate the term from other members of its class.

Definition formula:

Term = Class + Characteristics

Chemical energy is potential energy that is stored in gasoline, food, and oil.

Mechanical energy is energy related to the movement of objects.

Energy is the ability to do work.

Kinetic energy is the energy of motion.

Note: When defining, remember the following:

1. Definitions require the present simple tense.
2. The definite article, *the*, is usually not used with the term being defined because definitions are general statements. For example, we would define *a scientist* (in general), not *the scientist* (a specific one).

Sentence Patterns

Term		**General class word**	**Specific characteristics**
An astronomer	is	a scientist	who studies the universe.
A barometer	is	an instrument	that measures air pressure.
Conduction	is	a process	by which heat is transferred.
Physics	is	the study	of matter and energy.
A volt	is	a unit	for measuring electrical pressure.
Mercury	is a	liquid	metal.
A triangle	is a	three-sided	plane figure.
A dinosaur	is a	prehistoric	reptile.

Task 5 Correcting definitions

Determine what is wrong in the following definitions.

1. A scientific theory is a theory like Darwin´s theory.
2. An apple is round, red, and about the size of a fist.
3. An ear is an auditory appendage of Homo sapiens and other species.
4. A unicorn is not a real animal.
5. Tornadoes are very dangerous.
6. Radium is an element.
7. An amphibian is like a frog or a turtle.

Task 6 Complete these definitions

1. A machine is a device that transforms energy from …
2. An insulator is a substance that does not conduct …
3. Biophysics is a science which…
4. Fog is a cloud…
5. A satellite is a celestial body that…
6. A meteorite is a piece of rock from outer space that…

Task 7 Formulating definitions

Write a definition using the information given.

1. An antibiotic / drug / cures bacterial diseases
2. Lung / organ / breathing
3. Acoustics / science / sound
4. Photosynthesis / process / plants manufacture food
5. Catalyst / substance / speeds up but is not changed by a chemical reaction
6. Calorie / unit / measures heat
7. Cyclotron / apparatus / bombards the nuclei of atoms

Task 8 Creating definitions

Formulate a definition for each of these words.

An x-ray
Medicine
Maths
An echo
Caffeine
A wedge
Work
Nuclear energy

(Task 3,5 and 7 adapted from Zimmerman F. *English For Science.* Prentice Hall Regents, 1989. Task 2 and 4 adapted from Kelly, K. *Science.* Macmillan, 2007)