

Class: js 1

Subject: Basic science

Topic: ENERGY

INTRODUCTION:

MEANING OF ENERGY: Energy is defined as the ability to do work. This means that to do work, something or somebody must have energy.

You cannot walk, run, eat or go to school unless you have energy. The food you eat is digested in your feeding system. The digested food materials are then broken down inside your cells, with the aid of oxygen, to provide you with energy.

SOURCES OF ENERGY

Energy is derived from various sources. The main source of energy to the earth is the **sun**.

There are **natural and artificial sources of energy**

Natural sources of energy

- i. The sun
- ii. Food: the food we eat contains energy. The energy in food is part of the energy received by green plants from the sun.
- iii. Wood
- iv. Coal
- v. Natural gas
- vi. Wind
- vii. Water

Artificial sources of energy

- i. Electric generators
- ii. Batteries
- iii. Petroleum products
- iv. Diesel
- v. Kerosene

Forms of Energy

Energy exists in several forms. Each of them is regarded as a form of energy because they can equally do work.

- a. **Heat energy:** heat energy is used to cook food, iron clothes and boil water.
- b. **Light energy:** light is a form of energy. Light energy can deflect the pointer of a light meter. Plants also use light energy to make their food in the process of **photosynthesis**.
- c. **Sound energy:** sound energy enables us to hear sounds of different kinds such as human speech, animal sounds, singing, radio and television sounds and thunder.
- d. **Electrical energy:** electrical energy can deflect the pointer of a voltmeter. It can give you an electric shock. It is used to operate electric fans, radio sets, television sets, refrigerators and many other appliances.
- e. **Chemical energy:** chemical energy is the energy contained in chemical substances such as food, candle and petrol.
- f. **Mechanical energy:** mechanical energy is the form of energy which a body possesses by virtue of its position or its movement.
 - i. Potential energy: this is the energy a body has by virtue of its position.
 - ii. Kinetic energy: kinetic energy is energy of motion of a body. Any object that is moving has kinetic energy.
- g. **Nuclear energy:** this is the energy that is stored and can be released.

Transformation of energy

Energy can be converted or transformed from one form to another.

- a. **Conversion of electrical energy to heat and light energy:** Eg, Electricity supply from the main source is converted by the electric bulb into light (which can be seen) and heat (which can be felt) .
- b. **Conversion of electrical energy into heat energy:** an electric iron converts electrical energy into heat energy.
- c. **Conversion of electrical energy to sound energy:** an electric bell converts electrical energy into sound energy.
- d. **Conversion of electrical energy to magnetic energy:** a motor device which has coil of wires rotates when electricity passes through it. A coil becomes a magnet that causes something to rotate. Example, electric fan, electric grinder and electric sewing machine.
- e. **Conversion of light energy to heat energy:** paper turning brown when exposed to sunlight which might eventually become charred. This is because light energy has been converted into heat energy which charred or burnt paper.
- f. **Conversion of mechanical energy to electrical energy:** eg, an electric generator.
- g. **Conversion of mechanical energy to sound energy:** pulling a string of a guitar or a any local string instrument. The mechanical energy in the moving guitar string caused the air to vibrate and produce sound.
- h. **Conversion of chemical energy to light and heat energy:** striking a match and lighting a candle. The match and the candle contain chemical energy which is converted into light and heat energy when the match and candle burn.

- i. **Conversion of chemical energy into mechanical energy:** when you kick a football, chemical energy in the food you have eaten is converted into mechanical energy in your moving legs and foot.
- j. **Conversion of sound energy to electrical energy to sound energy:** use of telephone and radio.

Uses of Energy

- 1. Drying the hair.
- 2. Cooking.
- 3. Refrigerating
- 4. Cutting, grinding, mixing
- 5. Sewing
- 6. Welding
- 7. Washing and drying
- 8. Operating vehicles
- 9. Seeing
- 10. Reading
- 11. Operating different gadgets.
- 12. Plants use the sun's light energy to make food by photosynthesis. For living things, many plants like maize, wheat and sorghum provide food for humans.

Home work

- 1. State four uses of energy in your homes.
- 2. Explain the energy conversion of an electrical blender.
- 3. Explain the two forms of mechanical energy with other two examples.