Are you GCSE ready?

Test 3: Energy 1 – Energy costs and Energy transfer

Know

**[Each question = 1 mark]**

**01.** What unit is used on food labels to list the energy content of food?

1. Newtons
2. Kilowatts
3. Kilojoules
4. Kilograms

**02.** A quarterly home energy bill is £224. This covers 2190 hours at a price of 8 p per kWh. What was the average power used over the period?

1. 1.28 kW
2. 0.78 kW
3. 1.28 kWh
4. 0.78 kWh

**03.** What is the *power* of a device?

1. The energy stored in the device.
2. The maximum energy the device can transfer.
3. The speed at which the device transfers energy.
4. The energy required for the device to operate.

**04.** Which of the following is a renewable source of energy?

1. Gas
2. Coal
3. Nuclear
4. Biomass

**05.** Which of the following is a fossil fuel?

1. Nuclear
2. Biomass
3. Crude oil
4. Geothermal

**06.** What energy transfer takes place when a ball rolls down a hill?

1. Kinetic energy to elastic energy.
2. Thermal energy to kinetic energy.
3. Kinetic energy to chemical energy.
4. Gravitational potential energy to kinetic energy.

**07.** What energy transfer takes place when a kettle is boiled?

1. Electrical energy to thermal energy.
2. Chemical energy to thermal energy.
3. Thermal energy to chemical energy.
4. Electrical energy to chemical energy.

**08.** Which row in this table correctly shows the energy store, useful transfer and dissipated energy when a lightbulb is plugged into the domestic mains and turned on?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Energy store** | **Useful transfer** | **Dissipated energy** |
| A. | Light | Electrical | Chemical |
| B. | Thermal | Electrical | Light |
| C. | Electrical | Light | Thermal |
| D. | Chemical | Light | Thermal |

**09.** Which of the following transfers chemical energy to kinetic energy?

1. An athlete
2. A windmill
3. A ball rolling downhill
4. A battery operated torch

**10.** If a spring is compressed, what sort of energy is stored?

1. Kinetic
2. Elastic
3. Dissipated
4. Gravitational potential

Apply

**11.** Give two advantages and two disadvantages of using coal-fired power stations. Your answers may cover scientific, environmental or social factors. **[4]**

**12.** List the energy transfers involved when energy is produced in a hydroelectric power plant and used to run a hairdryer. **[3]**

**13.** Explain how energy is dissipated in these situations:

a. An accelerating car **[1]**

b. A hot cup of tea **[1]**

c. A swimmer **[1]**

EXTEND

**14**. Wind farms are a clean source of energy, but many people don’t want to live near one.

a. How would you persuade a government to invest in wind farms? **[1]**

b. How would you persuade a community that building a wind farm near them would be an asset to the area? **[1]**

**15.** Examine this chart which shows energy efficiency for different types of fuel.



a. What is the equation used to calculate energy efficiency? **[1]**

b. Why is there a steep change in efficiency between the coal fired plant and the tidal and hydro-electric power stations? **[1]**

c. How much energy is output for every 1000 J input to a hydro-electric plant? **[1]**