

Self Check Answers 3·1

- A toaster gives out *heat* energy.
 - A lift gains *potential* energy as it goes up.
 - Petrol has *chemical* energy.
 - A television uses *electrical* energy.
 - A car when it is moving has *kinetic* energy.
 - An electric fire gives out two kinds of energy.

Heat energy and *light* energy.

- The sun gives out two kinds of energy.

Light energy and *heat* energy.

- Show the answers to Q 2 to your teacher.
- The symbol for joule is J.
 - There are 2,500 joules in 2.5 kilojoules.

Self Check Answers 3·2

- Chemical ---> heat + light
 - Kinetic ---> potential
 - Potential ---> kinetic
 - Electrical ---> sound
 - Electrical ---> kinetic
- Chemical ---> Electrical
 - Electrical ---> Heat + Light
- At the bottom of the hill.
 - At the top of the hill.



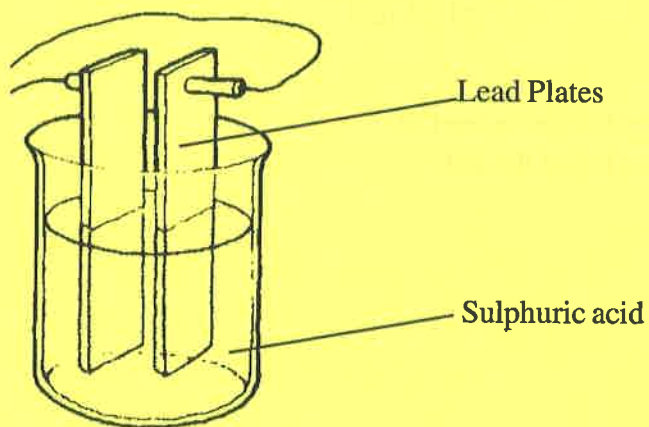
Self Check Answers 3·3

1. Potential
2. (a) In the globe at the top.
(b) Electrical energy is stored.
(c) Electrical \rightarrow Kinetic
3. (a) Chemical \rightarrow Heat
(b) Kinetic \rightarrow Electrical

Self Check Answers 3·4

1. (a) Electrical \rightarrow Chemical
(b) (i) Chemical \rightarrow Electrical
(ii) Electrical \rightarrow Heat + Light

2.



Self Check Answers 3·5

1. Coal, Oil and Gas are all fossil fuels.
2. (a) Chemical \rightarrow Heat + Light
(b) Kinetic \rightarrow Electrical
(c) The world is running out of fossil fuels.
3. Wind, Tidal, Hydroelectric and Solar energy.
4. (a) The water has potential energy.
(b) The water has kinetic energy.
(c) Kinetic \rightarrow Electrical
(d) Stage 2 is the turbine.

Self Check Answers 3·6

1. (a) Beakers B and D
(b) Beakers D and F
(c) Whether cotton or nylon is the better insulator.
2. D, copper, is the best conductor of heat.
3. A, air, is a bad conductor of heat.



Self Check Answers 3·7

1. Energy conservation means saving energy.

2.
 - (a) Having a shower uses less hot water than having a bath.
 - (b) Lowering the thermostat lowers energy usage.
 - (c) Appliances left on standby still use energy
 - (d) Double glazing reduces heat loss from the house.

3.
 - (a) Fitting loft insulation.
 - (b) Fitting double glazing
 - (c) Carpets reduce heat loss through the floor.
 - (d) Cavity wall insulation reduces heat loss through walls.
 - (e) Keeping doors closed reduces heat loss through doors.

Self Check Answers 3·8

1.
 - (a)
 - (i) 5.5 thousand kilojoules
 - (ii) 37.5 thousand kilojoules

 - (b)
 - (i) 11 thousand kilojoules
 - (ii) 12 thousand kilojoules

2.
 - (a) Crisps , 5°C Biscuit, 8°C Buttered bread, 6°C Nuts , 7°C
 - (b) Show the bar chart to your teacher.
 - (c) Biscuit gives out the most energy.

Self Check Answers 3·9

1. Light ---> Electrical
2. Distance from light, area of cell
3. To minimise the shadow on the cell.
4. Advantage, non polluting and renewable
Disadvantage needs a sunny place, doesn't work at night



PHYSICS

PHYSICS

Extra Work Self Check Answers 3·1

- At the top of the hill the sledge has potential energy.
 - At the bottom of the hill the sledge has kinetic energy.
 - They contain chemical energy.

2.

Joules (J)	Kilojoules (kJ)
4000	4
3500	3.5
500	0.5
100	0.1
3750	3.75
5000	5

- Show the graph to your teacher.

Extra Work Self Check Answers 3·2

- Kinetic ---> Sound
 - Potential ---> Kinetic
 - Chemical ---> Heat + Light
- Chemical ---> Heat + Light + Sound
 - Electrical ---> Sound
 - Electrical ---> Kinetic
- A microphone
 - An electric motor
 - An electric heater
- Glass Bulb
 - Tungsten filament
 - Argon gas
 - Metal contacts



Extra Work Self Check Answers 3·3

- The information is sent back to earth as radio signals.
 - The sunlight is too weak.
 - Nuclear fuel is used to make electricity.

2.

Hydroelectric Dam	Number of generators	Power (MW)
Tucuri	18	7,960
Ertan	9	3,330
Grand Coulee	24	10,800
Guri	20	10,300

- As the wind speed increases the charging current increases.
 - At a wind speed of 15 m/s the charging current is 60A.
 - A wind speed of 7.5 m/s will give a charging current of 20A.

Extra Work Self Check Answers 3·4

- Volta made the first battery in 1790
 - A lead acid battery has a voltage of 2.0 Volts.
 - A rechargeable battery is known as a secondary battery.
 - The Daniell cell and the lead acid battery both use sulphuric acid as an electrolyte.
 - A zinc carbon battery has a voltage of 1.5 Volts.

- As the concentration of acid increases the voltage of the battery increases.
 - A battery with a 60% concentration of acid would have a voltage of 2.3 Volts.
 - A 46% solution of sulphuric acid would have a voltage of 2.2 Volts.

Extra Work Self Check Answers 3·5

1.
 - (a) The most commonly used biomass fuel is wood.
 - (b) Charcoal is produced by heating wood in the absence of air.
 - (c) In fermentation sugar is converted into ethanol.
 - (d) Wood alcohol and ethanol are liquid biomass fuels.

2.
 - (a) Traditional windmills were used to turn millstones and drive water pumps.
 - (b) The national grid carries electricity to homes and industries throughout Britain.
 - (c) A 600 kW turbine can supply 400 households.
 - (d) The blades and gearbox of the wind turbine must be regularly maintained.

Extra Work Self Check Answers 3·6

1.
 - (a) Acrylic is best at keeping in heat.
 - (b) Black acrylic loses heat faster than white acrylic.
 - (c) The temperature would be about 63°C.

2. Show the line graph to your teacher.



Extra Work Self Check Answers 3·7

- Heating costs can be cut by 20% by installing effective loft insulation.
 - Blown insulation must be installed by a specialist contractor.
 - Protective clothing must be worn to prevent fibres damaging skin or lungs.
 - The material can blow about in a draughty loft.
- Show the bar graph to your teacher.
 - 2,500 Joules is lost through the roof.
 - Insulating the loft as it saves more energy.

Extra Work Self Check Answers 3·8

- Boxes 1 and 4.
 - He wanted to find out if changing the volume of water would affect the time the water took to boil.
- Sajeed should compare A and C.
 - He wanted to find out if different masses of cheese had different energy contents.

Extra Work Self Check Answers 3·9

- As the light intensity increases the voltage also increases.
 - A light intensity of 80 units gives a voltage of 28 mV.
 - A light intensity of 40 units gives a voltage of 14 mV.
- As the speed increases the fuel efficiency decreases.
 - The petrol car is more fuel efficient than the LPG car.
 - The LPG car will travel 12km.