



## Science Year 9

### Paper 1

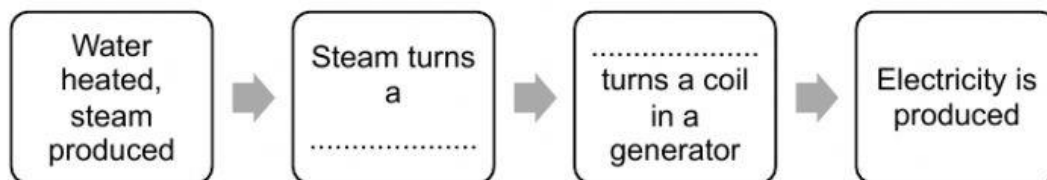
Name: \_\_\_\_\_ Marks: \_\_\_\_\_ / 35

1. Heat is produced in power stations by burning fuel. Heat is transferred to electrical energy as shown in the diagram below.

- (a) What word completes the missing part of the system?

Complete the diagram. Choose the correct answers.

[1]



- (b) Burning fuel to generate energy causes an increase in carbon dioxide in the atmosphere. Other energy sources also have environmental problems. Match up the energy resource with the problem it may cause in the environment below.

Draw **three** lines.

Hydroelectric

Lots of noise produced

Wind

Farm and forestry land is flooded for use

Tidal

Habitats of birds in estuaries destroyed

[3]

2. A solution of copper sulfate can be separated when heated.

Some students heated 20ml of copper sulfate solution, taken from the same batch. The diagram below shows how they set up their apparatus.



- (a) State **one** hazard associated with the reaction and the necessary safety precaution.

hazard: .....

safety precaution: .....

..... [2]

- (b) The students turned off their Bunsen burners and stopped heating the solution once it had begun boiling. They then left the remaining solution to evaporate for 24 hours. The students then measure the mass of the crystals collected. Below are their results.

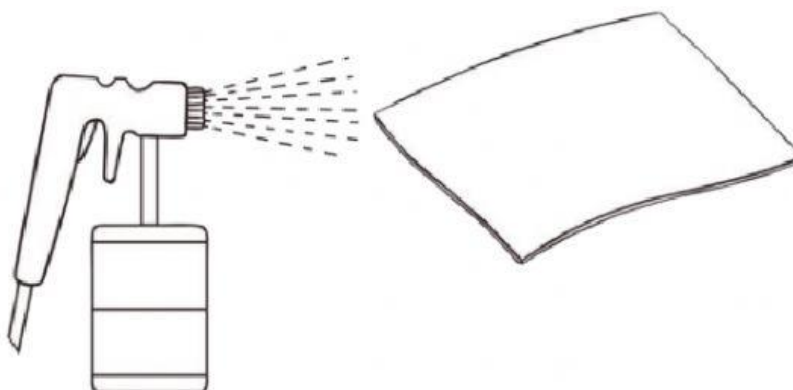
Student	Mass of crystals (g)
Joseph	6.4
Abdullah	7.1
Susan	12.3
Candice	6.9

Calculate the **mean average** mass of crystals collected.

Do **not** include any anomalous results.

mean mass = ..... g [2]

3. The diagram shows a paint sprayer being used on car panels.



Fill in the blanks using the words below.

**the same    opposite    attracted    repelled    repel    attract**

As the paint is sprayed, the droplets ..... each other  
because their charges are ..... The charge on the paint is  
..... to that on the panel so the paint droplets are attracted to  
it, leaving an even layer of paint.

[3]

4. A student was mixing chemicals in a lab and measuring the temperature changes she saw.

She mixed ethanoic acid with sodium carbonate and the temperature dropped.

- (a) What type of reaction is this?

..... [1]

- (b) Which of the following is **NOT** an exothermic reaction? Tick **one** box.

<input type="checkbox"/>	<b>A</b> Burning
<input type="checkbox"/>	<b>B</b> Neutralisation
<input type="checkbox"/>	<b>C</b> Reacting water and calcium oxide
<input type="checkbox"/>	<b>D</b> Melting ice cubes

[1]

- (c) A student set up an endothermic experiment: he added water to a beaker, took a temperature reading and left the thermometer in the beaker. He added some ammonium nitrate crystals and stirred the mixture.

Describe what he could expect.

.....

..... [1]

- (d) Complete the following table using the words **endothermic** or **exothermic**.

Reaction	Initial temperature °C	Final temperature °C	Reaction type
A	16	10	
B	17	24	
C	18	27	

[3]

5. A student was investigating rates of reaction and produced carbon dioxide using marble chips and hydrochloric acid.

- (a) Which one of these would increase the rate of reaction?

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | <b>A</b> Use a greater volume of hydrochloric acid.             |
| <input type="checkbox"/> | <b>B</b> Use a more concentrated solution of hydrochloric acid. |
| <input type="checkbox"/> | <b>C</b> Use sulphuric acid.                                    |
| <input type="checkbox"/> | <b>D</b> Use larger pieces of marble.                           |

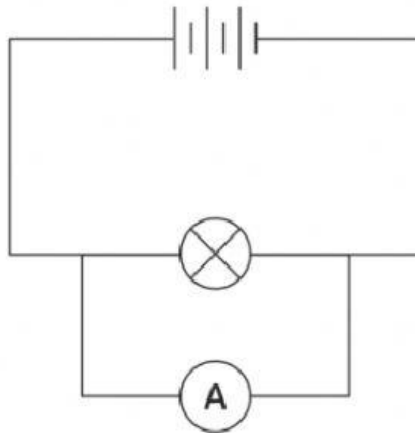
[1]

- (b) If the temperature was increased, what would happen to the rate of reaction? Explain your answer.

.....

..... [2]

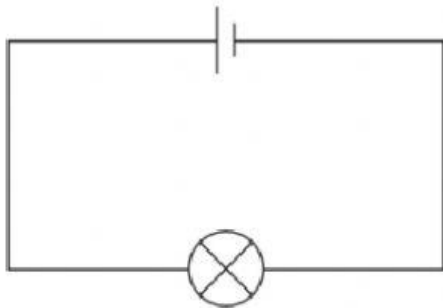
6. A group of students are investigating current and voltage in both parallel and series circuits. They set up the equipment as shown below.



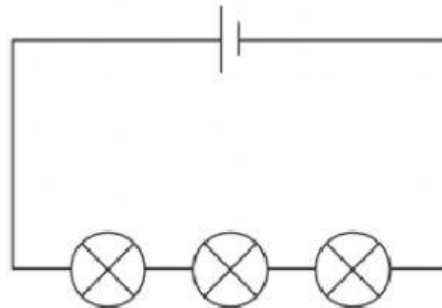
- (a) What mistake have the students made and how could they correct this mistake?

.....  
 ..... [2]

- (b) Two circuits are set up as shown below.



circuit **A**



circuit **B**

- (i) Which circuit has the highest current?

Explain your answer.

..... [2]

- (ii) What is the current for circuit **A** and **B**?

Choose the correct answer.

[1]

7. A group of students investigate the properties of halogens.

Table below shows their findings.

Halogen	Melting point	Boiling point	Reaction with hydrogen
Fluorine	-220	-188	Explosive
Chlorine	-101	-35	Explosive in light, react slowly in the dark
Bromine	-7	59	Only reacts at temperature over 300°C in the presence of a catalyst
Iodine	114	184	

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Use

- (a) What is the state of chlorine at room temperature?

Choose the correct answer.

[1]

- (b) Chlorine reacts with potassium bromide.

- (i) Complete the word equation to show the products of the reaction.



[2]

- (ii) What is the name of the type of reaction shown by the equation in (i)?

..... [1]

- (d) A student adds iodine to potassium bromide.

Explain what will happen.

..... [1]

8. Variation can be influenced by the environment or by an organism's gene.

(a) Draw **one** line from each characteristic to show whether it is influenced by the environment, genes, or both.

language spoken	environment
weight	genes
natural eye colour	both

[3]

(b) Height is a characteristic that can be influenced by both genes and your environment.

Explain why.

.....

.....

[2]