

9H Using chemistry

Assessment for learning...year 9 (level 3-6)

Answer all questions:

Total marks	27
Time allowed	25 mins.

Question 1:

(a) A pupil heated 1.24 g of copper carbonate strongly. The chemical reaction which took place is represented by the equation:



After the solid which remained had cooled, he weighed it. He found that its mass was 0.80 g.

(i) Why did the pupil find a decrease in mass in this experiment?

.....
.....

1 mark

(ii) He then heated the 0.80 g of solid again. When he weighed it after cooling, its mass was still 0.80 g. Explain why it had not changed in mass this time.

.....
.....

1 mark

(b) (i) In another experiment, he burnt magnesium ribbon in air. He found that the mass of the powder formed was greater than the original mass of the ribbon. Explain this.

.....
.....

1 mark

(ii) Write the balanced equation for the reaction which takes place when magnesium burns in oxygen.

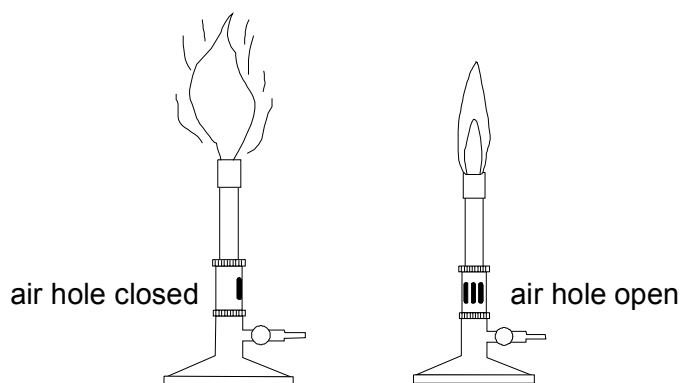
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1 mark

Maximum 4 marks

Question 2:

The diagrams show two Bunsen burners. One burner has the air hole closed, and the other has the air hole open.



(a) Explain why opening the air hole of a Bunsen burner makes the flame hotter.

.....
.....

1 mark

(b) Natural gas is methane, CH₄. It is burned in a Bunsen burner. Complete the word equation for the chemical reaction in the clear blue flame.

methane + → +

2 marks

Maximum 3 marks

Question 3:

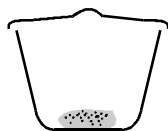
Two pupils heated some copper carbonate in a crucible. They recorded the mass of the crucible and contents before and after heating.

empty crucible



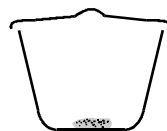
mass = 50.00 g

crucible and copper carbonate



mass = 51.24 g

crucible and copper oxide



mass = 50.80 g

The word equation for this reaction is:

copper carbonate → copper oxide + carbon dioxide

(i) What mass of carbon dioxide is given off in this reaction?
Give the unit.

.....

1 mark

(ii) What is the name of this type of chemical reaction?
Tick the correct box.

combustion

oxidation

reduction

thermal decomposition

1 mark

(b) The pupils then heated some magnesium in another crucible. They worked carefully and did not lose any of the magnesium oxide which formed. They recorded the mass of the crucible and contents before and after heating.

empty crucible



mass = 50.00 g

crucible and magnesium



mass = 50.12 g

crucible and magnesium oxide



mass = 50.20 g

(i) Write a word equation for the reaction.

.....

1 mark

(ii) Why does the mass of the contents of the crucible increase in this reaction?

.....

.....

1 mark

(iii) What is this type of chemical reaction called?

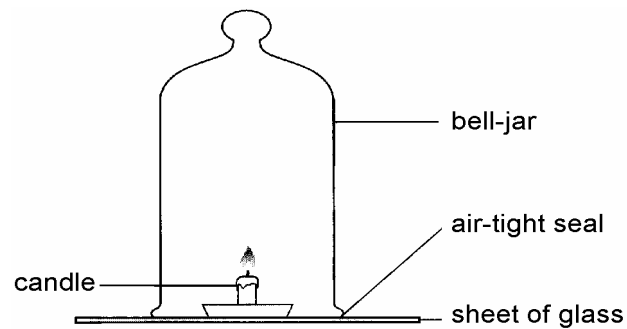
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1 mark

Maximum 5 marks

Question 4:

The diagram below shows a candle burning in air under a bell-jar.



(a) (i) When the candle burns, there is a reaction. Give the chemical formulae of the products of this reaction.

1.

2.

2 marks

(ii) As the candle burns, some of the candle wax is used up. Give two other observations which would show that a chemical reaction is taking place.

1.

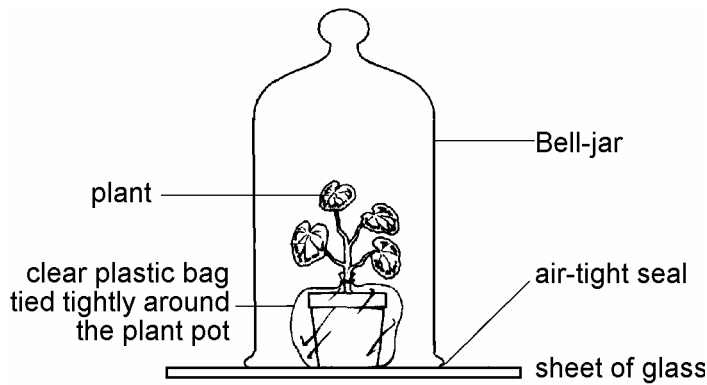
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2.

.....

2 marks

(b) A potted plant is placed under a bell-jar as shown below.



Photosynthesis in the leaves causes changes in the proportion of the gases in the bell-jar.

(i) In bright sunlight, what are **two** of these changes?

1.
2.

2 marks

(ii) Explain why the changes will be different if the plant is kept in the dark.

.....
.....
.....

2 marks

(c) Chlorophyll is the green substance present in cells in the leaves.

(i) Give the name of the part of the cell which contains chlorophyll.

.....

1 mark

(ii) Which part of the cell controls the production of chlorophyll?

.....

1 mark

Maximum 10 marks

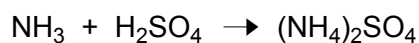
Question 5:

The names and formulae of five compounds are listed in the table below.

name of compound	formula of compound
ammonia	NH ₃
ammonium chloride	NH ₄ Cl
ammonium sulphate	(NH ₄) ₂ SO ₄
sodium hydroxide	NaOH
sodium sulphate	Na ₂ SO ₄

(a) Ammonia and sulphuric acid react to give ammonium sulphate, (NH₄)₂SO₄.

(i) Balance the equation for this reaction.



1 mark

(ii) Complete and balance the symbol equation for the reaction between sodium hydroxide and sulphuric acid.



3 marks

(b) The formula for ammonia is NH₃.

One atom of nitrogen weighs fourteen times as much as one atom of hydrogen.
What is the total mass of hydrogen in 17 g of ammonia?

..... g

1 mark

Maximum 5 marks