

Name

Mark

Class

Date

GCSE Science/Chemistry

Internally Assessed Activity Unit C1a

Topic 6 – Chemistry in the home

Food Chemistry

Many chemical substances are used in the home.

The photograph shows some of these substances in their containers.



Question 1

(a) Some substances have both a chemical name and a common name.

Draw one line from each chemical name to its common name.

chemical name

common name

ethanoic acid solution ●

● caustic soda

sodium chloride ●

● sugar

sodium hydroxide ●

● table salt

● vinegar

3 marks

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Turn over

- (b) Some chemical substances in the home are hazardous.
Draw one line from each hazard symbol to its correct danger.

hazard symbol



danger

● flammable
(catches fire)

● harmful

● toxic (poisonous)

● radioactive

3 marks

(6 marks)

Question 2

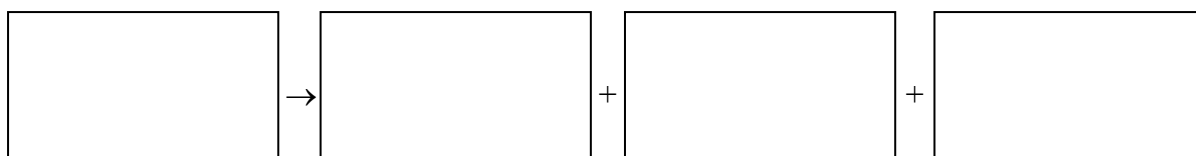
Baking powder or baking soda may be used when making cakes.



Baking soda is a common name for sodium hydrogencarbonate.

When heated, sodium hydrogencarbonate forms sodium carbonate, carbon dioxide and water.

- (a) Write a word equation for this reaction.



2 marks

- (b) What type of reaction occurs when sodium hydrogencarbonate is heated?

Tick the correct box.

reduction

oxidation

thermal decomposition

1 mark

(c) Describe the test for carbon dioxide.

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

2 marks

(d) What does carbon dioxide do to the cake mixture while the cake is baking?

.....
.....

1 mark

(e) How do you know a chemical change occurs when a cake is baked?

.....

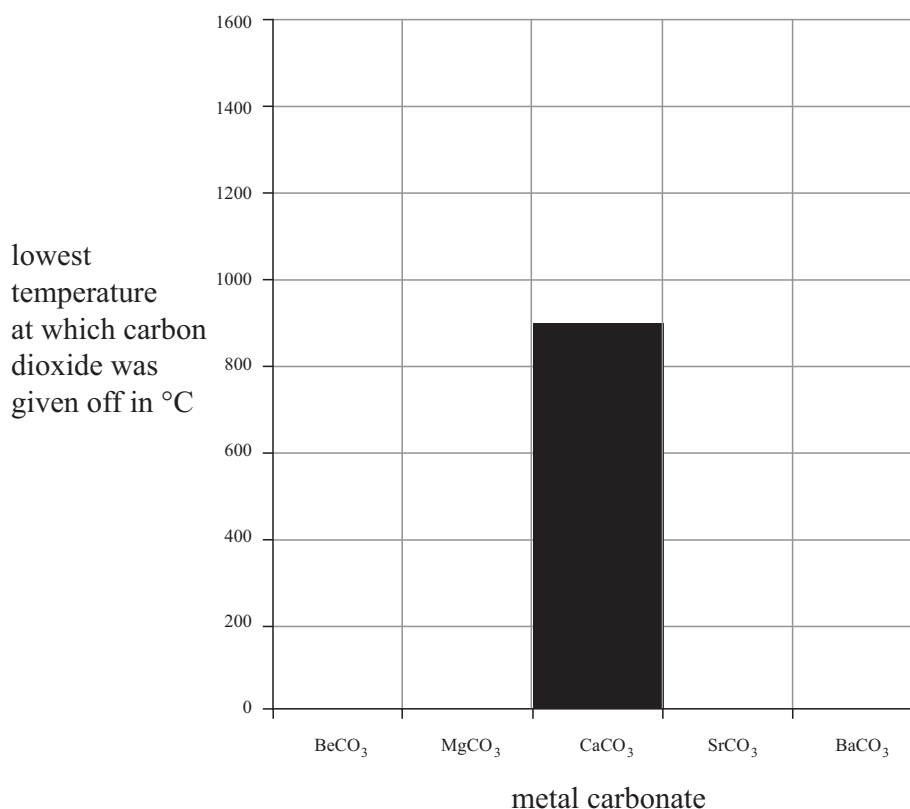
1 mark

- (f) In an experiment, various metal carbonates were heated. The lowest temperature at which carbon dioxide was given off was measured.

These results are shown in the table.

metal carbonate	atomic number of metal	lowest temperature at which carbon dioxide was given off (°C)
beryllium carbonate BeCO_3	4	100
magnesium carbonate MgCO_3	12	400
calcium carbonate CaCO_3	20	900
strontium carbonate SrCO_3	38	1280
barium carbonate BaCO_3	56	1360

- (i) Complete the bar chart. Calcium carbonate has been done for you.



2 marks

- (ii) Complete the sentence below, which describes the pattern in your chart.

“As the atomic number of the metal in the carbonate increases, the temperature at which carbon dioxide was given off

1 mark

(10 marks)

Question 3

Information in this question is provided by Cancer Research UK, a charity which researches into the causes of cancer.

Saccharin is one of the best known artificial sweeteners. Some studies in the 1980s found that it could cause bladder cancer in rats.

We now know that these effects are specific to rats and do not occur in humans.

Some people with diabetes use a lot of artificial sweeteners. These people have the same risk of developing bladder cancer as people who do not have diabetes.

During World War II, more saccharin was used. The percentage of people developing bladder cancer then was no greater than it is today.

- (a) The use of saccharin was banned by the Canadian government.

Use the information given above to explain a possible reason for this.

.....

.....

.....

.....

2 marks

- (b) Use the information above to give **three** reasons why saccharin should **not** be banned.

reason 1

.....

reason 2

.....

reason 3

.....

3 marks

- (c) Give one reason why Cancer Research UK would be a good source of information about any potential hazards of saccharin.

.....

.....

.....

1 mark

(d)

Tomatoes contain a chemical substance called lycopene. All tomato products, including tomato juice and tomato ketchup, also contain lycopene.

Increasing evidence shows that lycopene could reduce the risk of one form of cancer in men. A study involving 47 000 men found that eating between 2 and 4 servings of tomatoes each week reduced the risk of this cancer by 25%.

The results of other studies disagree. We are still unclear what dose of lycopene would be needed to reduce cancer risk.

There is some evidence that lycopene may need to be taken together with other nutrients, like selenium and vitamin E, for a full protective effect.

(i) Give **three** reasons why it may be wrong to say that taking lycopene will reduce cancer.

reason 1

.....
.....

reason 2

.....
.....

reason 3

.....
.....

3 marks

(ii) Two students, Alan and Philip, read the information above.

Philip says

I should only eat lycopene that occurs naturally in foods e.g. in tomatoes.

I should eat chemically produced lycopene because it can be made 100% pure.

Alan says

Choose **either** Alan **or** Philip and give **two** arguments in support of that person's comment.

Student chosen:

Arguments in support:

1

.....

.....

2

.....

.....

2 marks

(11 marks)

27 marks

Quality of written communication

/3

Total 30 marks