



Rewarding Learning

General Certificate of Secondary Education
2011–2012

Centre Number

71

Candidate Number

Science: Single Award (Modular)
Chemical Patterns and our Environment
Module 3

Foundation Tier

[GSC31]



MONDAY 21 MAY 2012, MORNING

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.
Answer **all eight** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

A Data Leaflet is provided for use with this paper.

For Examiner's
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	

Total
Marks

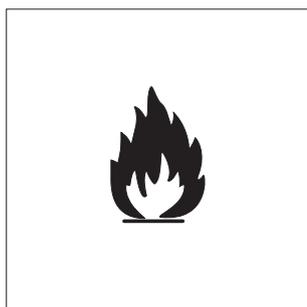
--



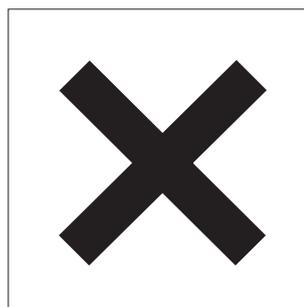
- 1 The diagrams below show the names of five chemicals and their hazard symbols.



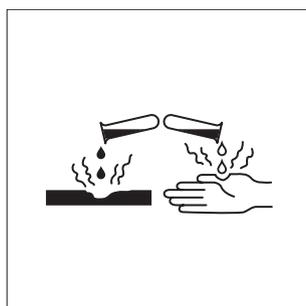
Ammonium dichromate



Ethanol



Sodium hydroxide



Hydrochloric acid



Barium chloride

© Crown copyright

- (a) From the information above:

- (i) name a chemical that is **toxic**.

_____ [1]

- (ii) name a chemical that is **corrosive**.

_____ [1]

- (iii) what is the hazard symbol shown for ethanol?

_____ [1]

- (b) Give two reasons why hazard symbols rather than words are used on bottles of chemicals.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

- 2 (a) Shown below are some well known foods and methods of preserving them. Using lines, link each food to the most suitable method of preservation.

Food	Method of Preservation
fish fingers	drying
tea leaves	canning
baby onions	pickling in vinegar
	freezing

[3]

- (b) Name **two** types of organism which can cause food to go bad.

Choose from:

flu : bacteria : salt : fungi : sugar

_____ and _____ [2]

Examiner Only	
Marks	Remark

3 (a) The Periodic Table is a way of classifying the chemical elements.

(i) Place a tick (✓) beside the correct statement about the Periodic Table.

The vertical columns are called periods

The Noble gases are very unreactive

The horizontal rows are called groups

[1]

(ii) Use your Data Leaflet to name two Noble gases.

_____ and _____ [2]

(b) (i) Name the element which catches fire and burns with a lilac flame when it is placed in water.

Choose from:

lithium : potassium : calcium

_____ [1]

(ii) Name the gas produced when this element reacts with water.

Choose from:

carbon dioxide : oxygen : hydrogen

_____ [1]

Examiner Only	
Marks	Remark

- 4 The picture shows the remains of an ammonite, an animal that lived in the sea millions of years ago.



© Junior Geo Ltd

- (a) (i) What name is given to animal remains found in rocks?

_____ [1]

- (ii) Name the **type** of rock in which animal remains are found.

_____ [1]

- (iii) When this type of rock is affected by pressure over long periods of time it can be changed into another type of rock. Name this new **type** of rock.

_____ [1]

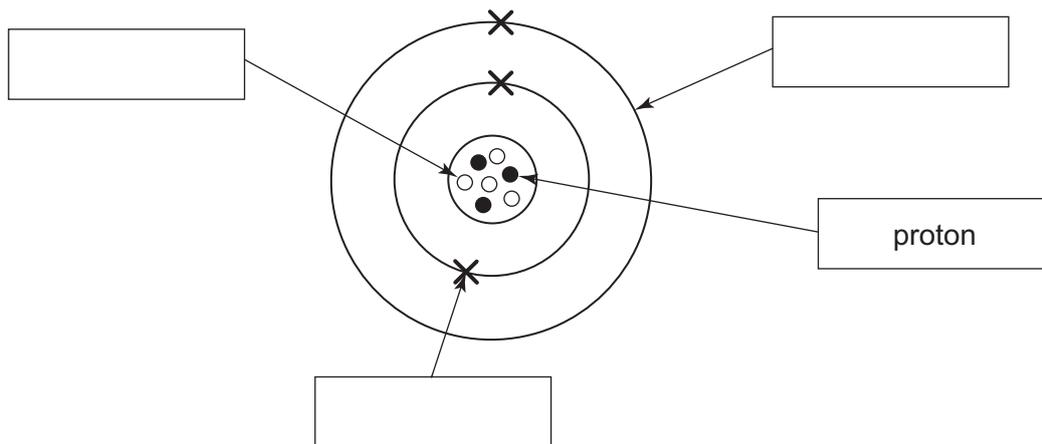
- (b) Complete the table below.

Type of rock	Example 1	Example 2
metamorphic		marble
	mudstone	limestone
igneous		granite

[3]

Examiner Only	
Marks	Remark

5 The diagram shows the structure of an atom.



(a) Label the diagram above.

Choose from:

shell : core : neutron : electron : cell [3]

(b) What is the **atomic number** for this atom?

Circle the correct answer.

3 4 7 10 [1]

(c) Complete the sentence below.

The **mass number** can be worked out by adding the numbers of

_____ and _____ [1]

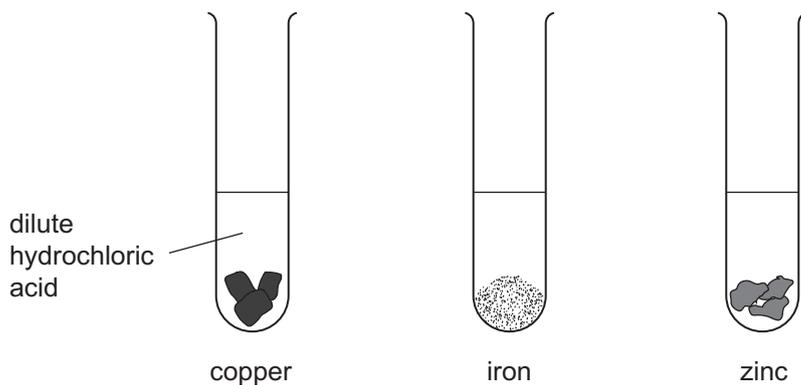
(d) Use your Data Leaflet to find the name and symbol for the element in the diagram above.

Name _____ Symbol _____ [2]

Examiner Only

Marks Remark

- 6 Sarah wanted to investigate the reactivity of some metals. She added samples of copper, iron and zinc to dilute hydrochloric acid and heated them using a Bunsen burner.



- (a) (i) Suggest which one of these metals did not react with the acid and give a reason why.

_____ [2]

- (ii) Give the name of the gas produced when the other two metals were heated in the acid.

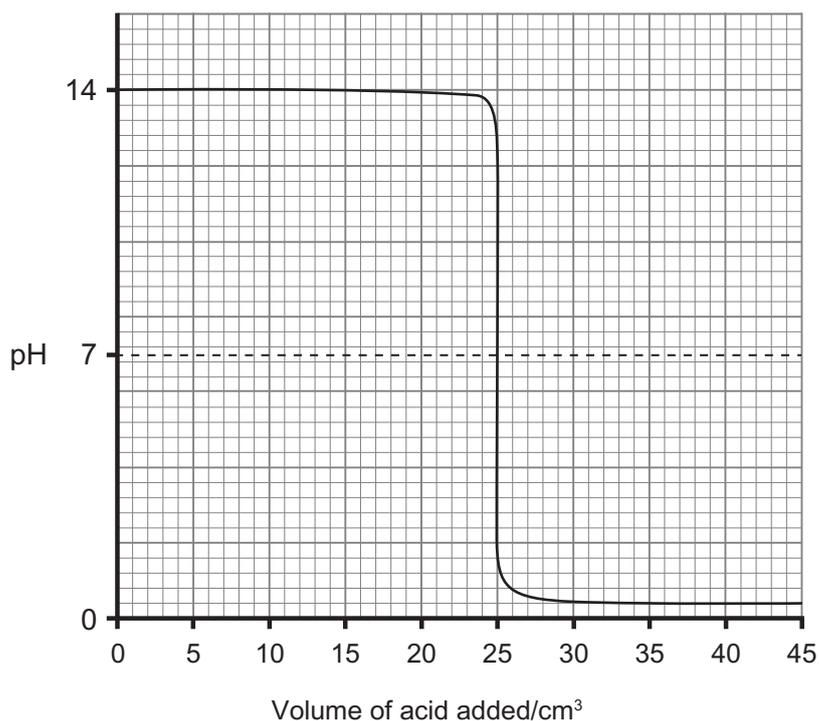
_____ [1]

- (b) Sodium metal also reacts with hydrochloric acid to give off a gas. Sarah was advised by her teacher not to use it. Explain fully why she was advised not to use sodium.

 _____ [2]

Examiner Only	
Marks	Remark

- 7 Jane measured the pH changes during a reaction using a pH probe. The following graph was produced.



She measured 25cm³ of sodium hydroxide into a conical flask and then slowly added hydrochloric acid.

- (a) Name a piece of apparatus that she could have used to add the hydrochloric acid.

_____ [1]

- (b) What was the pH value of the liquid in the flask at the start of the experiment?

_____ [1]

- (c) What volume of acid was needed to cause a sharp fall in the pH value?

_____ cm³ [1]

- (d) What name is given to reactions in which acids react with alkalis?

_____ [1]

Examiner Only	
Marks	Remark

(e) Complete the word equation for this reaction.



[2]

Examiner Only	
Marks	Remark

- 8 Tartrazine is a yellow colouring which is added to some foods. In Europe all food additives have to be tested many times before they can be used. Some scientists have linked tartrazine to hyperactivity in children. It has also been linked to allergies, migraines and even cancer.

The British Nutrition Foundation (BNF) believes that more research is needed before any link is proved between additives and allergies.

One scientist said, "The public should not be worried because the additives have been tested before they were added to food." Another scientist said, "Many additives should be avoided on health grounds".

- (a) Why is tartrazine added to food?

_____ [1]

- (b) Give **two** health problems which have been linked to tartrazine.

1. _____

2. _____ [2]

- (c) Explain fully why the public may be confused about the safety of food additives.

_____ [3]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

Permission to reproduce all copyright material has been applied for.
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA
will be happy to rectify any omissions of acknowledgement in future if notified.