

Centre Number			
71			
Cano	didate Number		

General Certificate of Secondary Education 2011–2012

Science: Single Award (Modular)

Chemical Patterns and our Environment Module 3 Foundation Tier

[GSC31]

TUESDAY 28 FEBRUARY 2012

11.00 am-11.45 am



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 seven** 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.

7703

For Examiner's use only			
Question Number	Marks		
1			
2			
3			
4			
5			
6			
7			
Total Marks			

- SULPHURIC ACID (i) In the box above draw the hazard symbol which should be placed on the bottle of sulphuric acid. [1] (ii) What kind of substance would be found in a bottle with the hazard symbol below? © Crown copyright _____ [1] (iii) Apart from warning of danger give two other reasons why hazard symbols, rather than words, are placed on bottles of chemicals. 1. _____ 2._____[2]
- 1 (a) Sulphuric acid is a **corrosive** liquid and should be labelled with a hazard symbol.

Examiner Only Marks Remark

(b)	Milł	c of Magnesia is a very useful household substance.	Examin	
	(i)	What is the chemical name for Milk of Magnesia?	Marks	Remark
		Circle the correct answer.		
		sodium hydrogencarbonate : magnesium chloride :		
		magnesium hydroxide [1]		
	(ii)	Complete the following sentence.		
		Choose from:		
		alkaline : neutral : acidic		
		Milk of Magnesia is an substance and can		
		be used to cure acid indigestion in the stomach. [1]		

2 (a) Below are some food additives and their functions. Examiner Only Marks Remark Match each food additive to its function by drawing straight lines. One has been done for you. **Food Additive Function** sweeteners makes food look attractive alternative to sugar emulsifiers colourings controls pH anti-oxidants stabilises oil and water mixtures stops fats from going off [3] (b) All additives have a number which starts with a letter of the alphabet. What is this letter? _____ [1] (c) Give two problems with putting additives in food. _ [2]

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(Questions continue overleaf)

Lime is a substance that farmers add to soil. Examiner Only Marks Remar When Universal Indicator and water are added to a sample of lime, there is a change in colour. drops of D Universal 0 Indicator 0 ٥ water lime (a) What colour would the indicator be? Circle the correct answer. red : green : purple [1] (b) Complete the sentence below. Red cabbage is a plant that contains a dye which changes colour in acid and alkaline solutions. This type of dye is called an _____. [1] (c) The diagram below shows another way of testing if a soil sample is acidic. 5.83 (i) What name is given to this type of apparatus? ___ [1] (ii) Suggest **one** advantage of using this apparatus. [1]

3

		_ [2]	



(a) Use the diagram to explain fully what happens when a volcano erupts.

[2]

(b) In March 2011 an earthquake off the coast of Japan caused a tsunami. State what a tsunami is and give **two** problems it can cause.

(c) The earthquake in March 2011 in Japan measured 9.5 on a scale. What is the name of the scale used to measure earthquakes?

___ [1]

_ [3]

Examiner Only Marks Remark

	trough water		
	piece of potassium metal		
Jack	recorded his observations as follows:		
• i • i • i	the potassium caught fire immediately t had a lilac flame t melted to form a shiny ball t moved quickly across the water surface a gas was given off a colourless solution was formed		
The	word equation for this reaction is:		
pota	ssium + water ——► potassium hydroxide + hydrogen		
	the information above to answer the following questions.		
Use		water.	
Use	the information above to answer the following questions.	water. [1]	
Use (a)	the information above to answer the following questions.	[1]	
Use (a)	the information above to answer the following questions. Give one piece of evidence that shows potassium is lighter than		
Use (a) ((b))	the information above to answer the following questions. Give one piece of evidence that shows potassium is lighter than	[1]	
Use (a) ((b))	the information above to answer the following questions. Give one piece of evidence that shows potassium is lighter than What is the name of the gas produced in this experiment?	[1]	
Use (a) (b)	the information above to answer the following questions. Give one piece of evidence that shows potassium is lighter than What is the name of the gas produced in this experiment?	[1] [1]	
Use (a) (b)	the information above to answer the following questions. Give one piece of evidence that shows potassium is lighter than What is the name of the gas produced in this experiment? Give one piece of evidence that this reaction produces heat.	[1] [1]	

		Marks	Remark
proton	a heskor or seven min re shown bek imoreinutes Metal X		
С]		
(a) Name the parts labelled A, B and C on the diagram abo	ve. [3]		
(b) Complete the sentence below.			
The number of plus the number of			
in an atom is called the mass number of that element.	[2]		
(c) An oxygen atom has eight electrons.			
In the space below, draw a diagram to show how these are arranged in an atom of oxygen.	eight electrons		
	[2]		

Examiner Only

(d)	Magnesium metal burns in air to produce the compound magnesium oxide.	Examin Marks	er Only Remark
	The formula for magnesium oxide is MgO.		
	Calculate the total number of particles in magnesium oxide.		
	You may find your Data Leaflet helpful.		
	protons		
	electrons		
	neutrons [3]		

7 David did an experiment to investigate which metals are the most reactive. He set up the apparatus as shown in the diagram below.



2 colourless silvery colour colourless greyish white deposit 3 reddish brown colourless colourless silvery colour no deposit colour 4 colourless reddish brown blue greyish colour deposit

Use this information to answer the following questions.

- (a) What name is given to a reaction in which one metal takes the place of another metal?
 - _ [1]

Examiner Only Marks Remark

- (b) In which test tube, 1, 2, 3, or 4, was there no chemical reaction?
 - _____ [1]

(c) Name the reddish brown deposit on the zinc metal in test tube 1.

_ [1]

(d)	The solution in tes happened.	st tube 1 lost its	blue colour. E	Explain how this		Examiner Only larks Remark
					[1]	
(e)	Which of the meta	ls involved is th	ie most reactiv	ve?		
	Circle the correct a	answer.				
	copper	silver	zinc	lead	[1]	
(f)	Explain fully what	has happened	in test tube 4.			
					[2]	
_					_	
_	THIS IS THE I	END OF TH	IE QUEST	ION PAPER	2	

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