



General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)
Chemical Patterns and our Environment
Module 3
Higher Tier
[GSC32]

WEDNESDAY 9 NOVEMBER 2011
9.15 am–10.00 am



Centre Number

71

Candidate Number

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 six** 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	

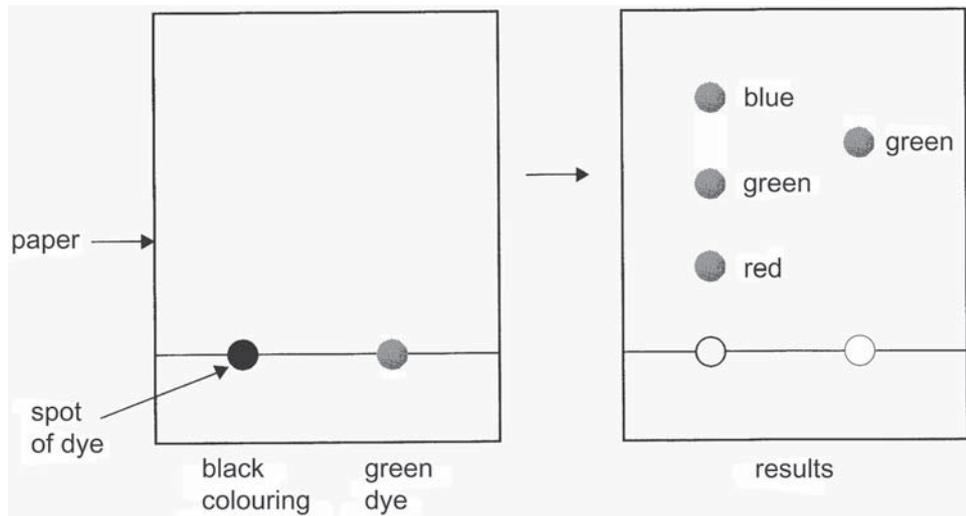
Total Marks



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- 1 Emma investigated if a green dye was used in making a certain black colouring which is used in baking.

She carried out an experiment and obtained the following results.



- (a) What name is given to this type of experiment?

_____ [1]

- (b) Which dye from the black colouring was the most soluble in this experiment?

_____ [1]

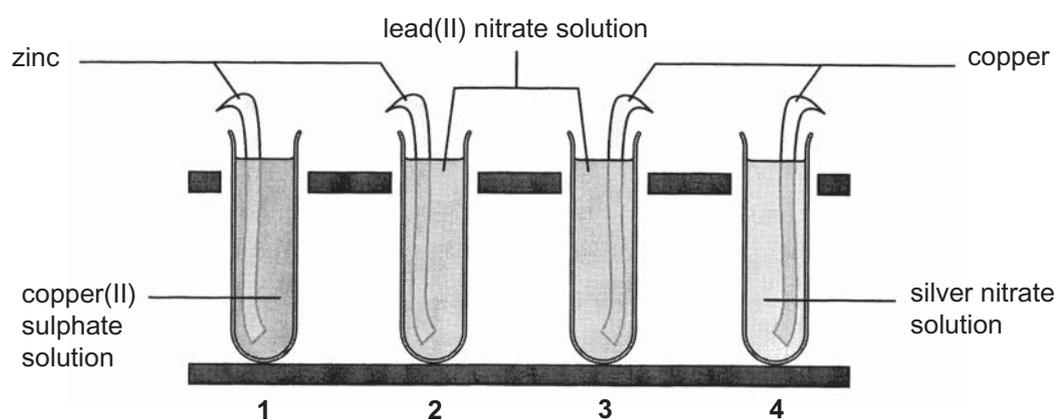
- (c) Explain fully what Emma has found out from her results.

 _____ [2]

Examiner Only

Marks Remark

- 2 The diagram below shows four solutions into which strips of metal were placed.



After several hours the following results were obtained.

Test tube 1: solution lost its blue colour and a reddish brown deposit was seen on the metal strip.

Test tube 2: solution remained colourless and a greyish white deposit was seen on the metal strip.

Test tube 3: solution remained colourless and the metal strip remained shiny with no deposit.

Test tube 4: solution turned blue and a deposit was seen on the metal strip.

Use this information to answer the following questions.

- (a) Why are reactions like these described as displacement reactions?

_____ [1]

- (b) Name the reddish brown deposit formed on the zinc in test tube 1.

_____ [1]

- (c) Why did the solution lose its blue colour in test tube 1?

_____ [1]

Examiner Only	
Marks	Remark

(d) Explain fully the result for test tube 3.

_____ [2]

(e) Two products were formed in test tube 4. Name these two products.

_____ and _____ [2]

(f) Which of the metals involved is the least reactive?

Circle the correct answer.

copper zinc lead silver [1]

(g) Explain fully why sodium would not be a suitable metal for this experiment.

_____ [2]

Examiner Only

Marks Remark

3 (a) Aluminium is an element which has 13 electrons.

In the space below draw a diagram to show how all these electrons are arranged in an atom of aluminium.

[2]

(b) Complete the table below about the particles in an atom.

Particle	Mass	Charge
electron	1/1840	
neutron		0
	1	+1

[3]

(c) Use your Data Leaflet to name the formulae given below .

(i) CaCO_3 _____

(ii) KOH _____

(iii) Na_2SO_4 _____

[3]

Examiner Only

Marks Remark

- 4 Sherbet is a kind of sweet which can be made using baking soda.



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- (a) Give the chemical name and formula for baking soda.

Name _____

Formula _____ [2]

- (b) Sherbet is made from a mixture of baking soda and citric acid which react together in the mouth to produce a cooling sensation.

Write a complete word equation for this reaction.

_____ [4]

- (c) Baking soda is also used to make honeycomb. In this reaction the baking soda is added to a mixture of golden syrup and sugar which has been allowed to come to the boil in a saucepan.

Describe fully the chemical reaction which takes place in the saucepan.

 _____ [3]

- (d) Why would adding vinegar to the honeycomb mixture improve the height of the honeycomb?

 _____ [2]

Examiner Only	
Marks	Remark

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