1

SUPERVISOR'S USE ONLY

90933



Level 1 Chemistry, 2014

90933 Demonstrate understanding of aspects of selected elements

9.30 am Wednesday 19 November 2014 Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of aspects of selected elements.	Demonstrate in-depth understanding of aspects of selected elements.	Demonstrate comprehensive understanding of aspects of selected elements.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

A periodic table and other reference material are provided in the Resource Booklet L1–CHEMR.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

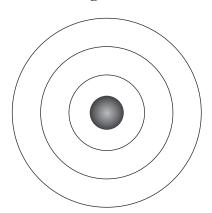
Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

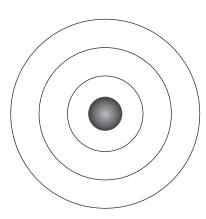
TOTAL

(a) Draw the electron arrangement for the atoms magnesium and chlorine on the diagrams below. You may refer to the periodic table in the Resource Booklet.

Magnesium

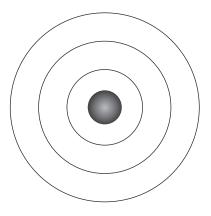


Chlorine

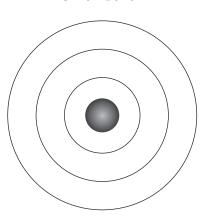


(b) Draw the electron arrangement for the magnesium and chloride ions on the diagrams below.

Magnesium ion



Chloride ion



(c) Explain how magnesium and chlorine atoms react to form ions using the electron arrangements you have drawn above.

Relate your answers to the positions of the atoms on the periodic table of elements.

(d)

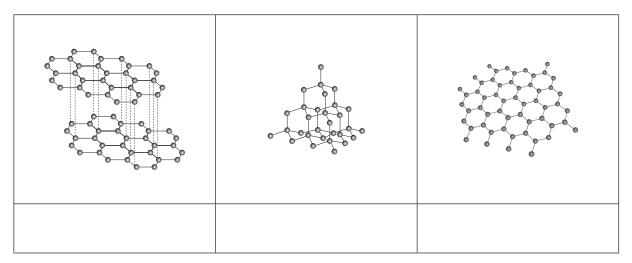
Ma	gnesium and copper are both metals used in the school laboratory.	ASSESSOR'S USE ONLY
Ela	borate on the reactivity of these two metals in hydrochloric acid, HCl.	
In y	your answer you should:	
•	identify any observations you would make when each of magnesium and copper are added separately to hydrochloric acid	
•	link each observation to the reactants and products involved in the reaction	
•	write a balanced symbol equation for any reaction that occurs.	
You	a may refer to the activity series in the Resource Booklet.	
		_
		_
		_
		_
		_
		_
		_
		_
		_
		1

QUESTION TWO: CARBON ALLOTROPES

ASSESSOR'S USE ONLY

Three allotropes of carbon are called diamond, graphite, and graphene. Each form of carbon has a different structure with different properties and uses.

(a) In the boxes below, identify each allotrope.



(b) Evaluate one use for each of the allotropes, diamond and graphite.

In your answer:

(i)

- identify ONE use for each of diamond and graphite, and link it to TWO relevant physical properties of the allotrope
- explain the TWO physical properties you identified for each allotrope, in terms of chemical structure and bonding.

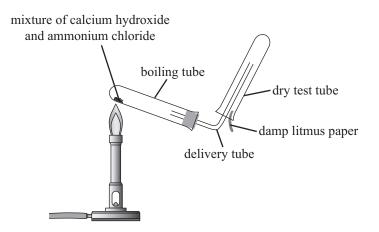
Diamond			

(ii)	Graphite
Oxy	gen can also form allotropes.
Oxy _i	gen can also form allotropes. Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.
(i)	Identify TWO allotropes of oxygen.

QUESTION THREE: AMMONIA

ASSESSOR'S USE ONLY

Ammonia can be prepared in a school laboratory in the following manner.



For the following questions, refer to the chemical and physical properties of ammonia in your answers.

ı) I	Expl	ain the reason for the way ammonia gas is collected in the test tube, as shown above.
		e a balanced symbol equation for the formation of ammonia gas in the reaction shown in liagram at the top of this page.
	Dam (i)	p litmus paper changes colour in ammonia gas. Describe the colour change in the damp litmus paper.
	(ii)	Explain why the litmus paper has to be damp.

	vn in the diagram.
(i)	Explain why the water will move up into the test tube. water
(ii)	When the water moves up into the test tube, the nature of the solution changes as a chemical reaction takes place.
	Justify, with a balanced symbol equation, how the nature of the solution has changed.

	ASSESSOR'S
l- eg	
ed	

QUESTION FOUR: USES OF METALS Aluminium is widely used to make soft drink cans. For copyright reasons, this (i) Evaluate the use of aluminium for this purpose. (a) resource cannot be Refer to BOTH physical and chemical properties of reproduced here. aluminium, and explain why they make aluminium suitable for making soft drink cans. http://1.bp.blogspot. com/-GN5HLwk6iew/ UHMHUq5FdeI/ AAAAAAAAAPI/k_2Aikll M/s1600/aluminum-can.jpc Name ONE metal that would be unsuitable as a material for making soft drink cans. (ii) Justify your choice by referring to either a physical or a chemical property of the name metal. You may refer to the activity series in the Resource Booklet.

(b)	Aluminium alloys are used to make planes and helicopters.		ASSESSOR'S USE ONLY
	Explain the advantages of using an aluminium alloy, rather than pure aluminium, for this purpose.	For copyright reasons, this resource cannot be	
	In your answer, you will need to explain how the structure and properties of an alloy differ from those of a pure metal.	reproduced here.	
	You may use a labelled diagram to illustrate your answer.	http://www.channelweb.co.uk/ IMG/694/201694/airplane-generic. jpg?1321006217	
			_
			_
			_
			_
			_
			_
			_
			-
			-

	Extra paper if required.	
QUESTION NUMBER	Write the question number(s) if applicable.	