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90933



# Level 1 Chemistry, 2011

# 90933 Demonstrate understanding of aspects of selected elements

#### 9.30 am Tuesday 22 November 2011 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 room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–8 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

You are advised to spend 60 minutes answering the questions in this booklet.

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# **QUESTION ONE: PERIODIC TRENDS**

.)	Using the Periodic Table in the Resource Booklet, give the electron arrangements of sodium and nitrogen.				
	(i)	Sodium:			
	(ii)	Nitrogen:			
	(iii)	Using these electron arrangements, explain how sodium and nitrogen differ in their ability to form ions.			
)	Com	pare and contrast the electron arrangements of the Group 1 metals, <b>sodium</b> and <b>lithium</b> .			

(c) Lithium and sodium are both Group 1 metals.

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Analyse the type of reaction that these metals have with water.

In your answer include:

- observations of lithium and sodium reacting with water
- a word and balanced symbol equation of ONE of these reactions
- a comparison of the reactivity of lithium and sodium, with water.

Word equation	
Balanced symbol equation	

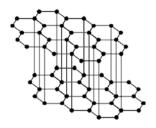
## **QUESTION TWO: CARBON**

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Three allotropes of carbon are diamond, graphite and buckminsterfullerene,  $C_{60}$  (buckyballs). Each of these substances has different properties and uses. The only thing they have in common is that they are made from carbon.







Graphite



Buckminsterfullerene  $C_{60}$ 

Evaluate ONE named use or proposed use of EACH allotrope by linking each use to either a chemical or physical property of each allotrope.				

## QUESTION THREE: SULFUR AND SULFURIC ACID

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Sulfur in its pure form reacts with oxygen.

ed equation for th	is reaction.			
	ed equation for th	ed equation for this reaction.	ed equation for this reaction.	ed equation for this reaction.

(c) (i) Complete the following table for the reactions of sulfuric acid,  $H_2SO_4$ , with a cleaned piece of lead metal, and with a cleaned piece of zinc metal.

You may refer to the Activity series in the Resource Booklet.

Metal	Observations of the reaction with sulfuric acid	Balanced equation
lead		
zinc		

explain why the sulfuric anclude a balanced equation	ciccurcity 50 well.	
Balanced equation		

# **QUESTION FOUR: USES OF METALS**

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	Electrical conductivity	Density g/cm <sup>3</sup>	Chemical reactivity	Melting point	Ductility
copper	very high	9.0	low	1100°C	good
aluminium	high	2.7	low	660°C	excellent

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