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Level 1 Chemistry, 2019

90933 Demonstrate understanding of aspects of selected elements

9.30 a.m. Monday 18 November 2019
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 and clearly number the question.

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

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QUESTION ONE

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Copper is used to make many different things.

(a) Give two different uses for copper and explain why it is used in these ways by linking to relevant chemical AND physical properties of copper.

(b) (i) Brass is an alloy of copper and zinc. Brass is often used instead of pure copper to make door knobs.

Why are alloys often more useful than a pure metal, such as copper?

In your answer, you should:

- refer to the structure of the alloy
- support your answer with a diagram of the structure of the alloy.

www.broughtons.com/store/product/86312/oval-mortice-door-knobs-on-square-plate-antique-satin-brass/

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Diagram:

(ii) Other forms of brass contain lead and aluminium.

How could lead and aluminium each affect the properties of brass?

QUESTION TWO

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(a) Why do potassium ions and chloride ions have different charges but the same electron arrangement?

In your answer, you should:

- explain why ions form
- include the electron arrangements of both ions and their atoms
- relate the charges of the ions to the positions of the atoms on the Periodic Table.

You may use the Periodic Table provided in the resource booklet.

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(b) Sodium and lithium both react with water.

Compare and contrast the reactions of these elements with water.

In your answer, you should:

- describe any observations that would be seen and link these to the species involved
- write a balanced symbol equation for the reaction of **lithium** with water.

Balanced symbol equation for the reaction between **lithium** and water:

(c) Sodium and lithium also react with dilute acids, such as hydrochloric acid and sulfuric acid.

(i) Complete the word equation for lithium reacting with hydrochloric acid.

lithium + hydrochloric acid →

(ii) Complete the balanced symbol equation for sodium reacting with sulfuric acid.

$Na + H_2SO_4 \rightarrow$

QUESTION THREE

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(a) Ozone and sulfur dioxide can both be used to preserve food. Ozone is often used to preserve fresh fish. Sulfur dioxide is often used to preserve dried fruits.

Fish

www.ozonesolutions.com/info/ozone-in-seafood-processing

Dried apricots

www.videoblocks.com/video/pile-of-dried-apricots-rotating-v1ec9uptxim6zs36s

Why can ozone and sulfur dioxide be used to preserve foods?

In your answer, you should compare and contrast how these two substances can be used to preserve food.

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(b) Sulfur will react with oxygen.

Elaborate on this reaction.

In your answer, you should:

- describe any conditions required
- give observations and link these to the species involved
- write a balanced symbol equation.

Balanced symbol equation:

(c) Pure water is a poor conductor of electricity, but a solution of sulfuric acid in water is a good electrical conductor.

Why is a sulfuric acid solution a good electrical conductor, whereas pure water is not?

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

QUESTION NUMBER

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