N5 Chemistry: Unit 1 – Chemical Changes and Structure REVISION

Lesson 24 – Chemical Formula

Learning Outcomes

By the end of this lesson, you should have revised:

1. The layout of the periodic table.
2. How to use the atomic number and mass number of an element to determine its structure.
3. How to write and draw electron arrangements for different elements.

Success Criteria

You will have been successful in this lesson if you:

1. Watch the links provided
2. Complete revision questions provided
3. Complete and submit homework assigned

There is also a further reading section to help you gain more depth of understanding for this section.

If you have any questions about the content of this lesson, you should ask your class teacher either through your class MS team or via email. MS Teams will be monitored throughout the week by a chemistry teacher. If you need help or clarification with either the task or the content of the lesson, just ask.

Links to Prior Knowledge

You may wish to revise the following to help you understand this lesson:

- N5 Unit 1: Atomic Structure and Bonding Related to Properties of Materials

You do not need to copy any notes as this is all revision, but you should complete all questions and tasks as outlined in this document.

Watch the video first:

Lesson 24: Chemical Formula - https://youtu.be/xMURfH6kxzw

You should also consult your Unit 1 Notes and printed notes to help further consolidate your knowledge. A digital copy of the printed notes can be found on the S4 Chemistry Team.

Further Reading

To learn more about this topic, try the following online resources:

BBC Bitesize: https://www.bbc.co.uk/bitesize/guides/zqrxsbk/revision/1

Read pages 1-4

Scholar: Log in through GLOW

National 5 Chemistry → Chemical Changes and Structure → 5. Chemical Formulae

Evans2 chem web: https://www.evans2chemweb.co.uk/

Username: snhs password: giffnock

Select any teacher → revision → National 5 → Unit 1 → Formulae and reaction quantities

Extension Questions:

Yellow/Purple book	*Covalent bonding*	*page 24-25 qu. 5 + 8*
	Ionic bonding	*page 28-29 qu. 9-12*

Complete the following questions in your class work jotter. The answers will be posted on Teams on Wednesday for you to self-assess.

Practice Questions – Chemical Formula

1. Write the chemical formula for the following:
   a. carbon tetrafluoride
   b. phosphorus trihydride
   c. dinitrogen pentoxide (3)

2. Write the chemical formula for the following:
   a. hydrogen sulfide
   b. aluminium oxide
   c. calcium chloride (3)

3. Write the chemical formula for the following:
   a. sodium carbonate
   b. calcium hydroxide
   c. ammonium sulfate (3)

4. Write the chemical formula for the following:
   a. iron (III) oxide
   b. copper chloride
   c. lead (II) bromide (3)

5. Write the **ionic** formula for the following:
   a. aluminium sulfide
   b. potassium dichromate
   c. vanadium (V) oxide (3)

Total: 15 marks

Past-Paper Questions – Chemical Formula

1. What is the charge on the chromium ion in $CrCl_3$?

A 1+

B 1-

C 3+

D 3- (1)

2. What is the charge on the zinc ion in zinc dichromate, $ZnCr_2O_7$?

You may wish to use the data booklet to help you.

A 2+

B 2-

C 1+

D 1- (1)

3. What is the charge on the zinc ion in zinc phosphate, $Zn_3(PO_4)_2$?

A 2+

B 3+

C 2-

D 3- (1)

(questions continued on the next page)

4. Read the passage and answer the question.

Clean coal technology comes a step closer

It is claimed a process called Coal-Direct Chemical Looping (CDCL) is able to release energy from coal while capturing 99% of the carbon dioxide emitted. CDCL works by extracting the energy from coal using a reaction other than combustion.

A mixture of powdered coal and beads of iron(III) oxide is heated inside a metal cylinder. Carbon in the coal and oxygen from the beads react to form carbon dioxide which can be captured for recycling or stored.

This reaction gives off heat energy that could be used to heat water in order to drive electricity-producing steam turbines.

Adapted from *Focus: Science and Technology*, April 2013

Write the ionic formula for the iron compound used in CDCL. (1)

5. Write the formula, showing the charge on each ion, for calcium carbonate. (1)

6. Read the passage below and answer the question.

Potassium – The Super Element

Potassium is an essential element for almost all living things. The human body requires a regular intake of potassium because humans have no mechanism for storing it. Foods rich in potassium include raisins and almonds. Raisins contain 0·86 g of potassium in every 100 g.

Naturally occurring salts of potassium such as saltpetre (potassium nitrate) and potash (potassium carbonate) have been known for centuries. Potassium salts are used as fertilisers.

Potassium was first isolated by Humphry Davy in 1807. Davy observed that when potassium was added to water it formed globules which skimmed about on the surface, burning with a coloured flame and forming an alkaline solution.

Write the **ionic** formula for saltpetre. (1)

7. Write the formula, showing the charge on each ion, for aluminium hydroxide. (1)

Total: 7 marks