

N5 Chemistry

Unit 1: Chemical Changes & Structure

Homework 1.5

1. Which oxide, when shaken with water, would leave the pH **unchanged**?
- A Carbon dioxide
B Calcium oxide
C Sulfur dioxide
D Zinc oxide
- Answer _____
2. An atom has atomic number 23 and mass number 51. The number of electrons in the atom is
- A 23
B 28
C 51
D 74.
- Answer _____
3. The formula for magnesium sulfite is
- A MgS
B MgSO₃
C MgSO₄
D MgS₂O₃.
- Answer _____
4. Which of the following particles contains a different number of electrons from the others? (Refer to data booklet for help.)
- A Cl⁻
B S²⁻
C Ar
D Na⁺
- Answer _____
5. The chemical formula for dinitrogen tetroxide is
- A NO
B N₂O
C N₂O₃
D N₂O₄.
- Answer _____
6. The formula for potassium sulfate is
- A P₂SO₃
B K₂SO₄
C P₂SO₄
D K₂S.
- Answer _____
7. Which of the following pairs of elements combine to form an ionic compound?
- A Lead and fluorine
B Sulfur and oxygen
C Carbon and nitrogen
D Phosphorus and chlorine
- Answer _____
8. Which of the following compounds exists as diatomic molecules?
- A Carbon monoxide
B Sulfur dioxide
C Nitrogen trihydride
D Carbon tetrachloride
- Answer _____
9. Which of the following numbers is the same for lithium and oxygen?
- A Mass number
B Atomic number
C Number of outer electrons
D Number of occupied energy levels
- Answer _____

10. Glass is made from the chemical silica, SiO_2 , which is covalently bonded and has a melting point of 1700°C .

a) What does the melting point of silica suggest about its **structure**?

_____ 1

b) Antimony(III) oxide is added to reduce any bubbles that may appear during the manufacturing process.

Write the chemical formula for antimony(III) oxide.

_____ 1

c) In the manufacture of glass, other chemicals can be added to alter the properties of the glass. The element boron can be added to glass to make oven proof dishes.

i) Information about an atom of boron is given in the table below.

Particle	Number
proton	5
electron	5
neutron	6

Use this information to complete the nuclide notation for this atom of boron.



_____ 1

ii) Atoms of boron exist which have the same number of protons but a different number of neutrons from that shown in the table.

What name can be used to describe the different atoms of boron?

_____ 1

11. Give the chemical formula for the following substances.

a) Sulfur trioxide _____

d) Carbon Monoxide _____

b) Carbon tetrafluoride _____

e) Phosphorus trichloride _____

c) Nitrogen dioxide _____

f) Silicon tetrabromide _____

6

12. Information on some two-element molecules is shown in the table.

Name	Formula	Shape of molecule
hydrogen fluoride	HF	H—F
water	H ₂ O	$\begin{array}{c} \text{O} \\ / \quad \backslash \\ \text{H} \quad \text{H} \end{array}$
ammonia	NH ₃	

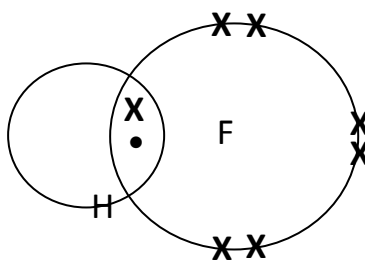
a) Complete the table to show the **shape** of a molecule of ammonia.

1

b) The atoms in water molecule are held together by covalent bonds.
Explain how covalent bonds hold atoms together in molecules.

1

c) The hydrogen fluoride molecule can be represented as:



Showing **all** outer electrons, draw a similar diagram to represent a molecule of water, H₂O.

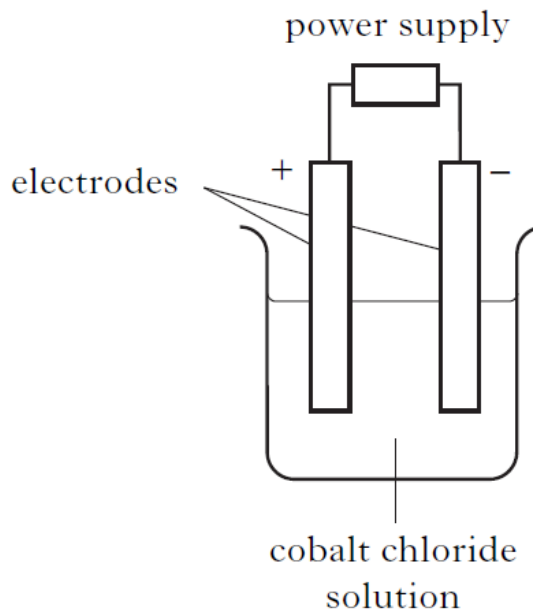
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13. For each of the following substances write the chemical formula.

- | | | | |
|----------------------|-------|----------------------|-------|
| a) Nitrogen chloride | _____ | f) Potassium nitrate | _____ |
| b) Sodium carbonate | _____ | g) Silicon hydride | _____ |
| c) Calcium hydroxide | _____ | h) Ammonium nitrate | _____ |
| d) Carbon bromide | _____ | i) Aluminium oxide | _____ |
| e) Magnesium oxide | _____ | j) Lithium phosphate | _____ |

10

14. A student set up the following experiment to electrolyse cobalt chloride solution.



- a) What **type** of power supply **must** be used to electrolyse cobalt chloride solution.

_____ 1

- b) Describe what would be **seen** at the positive electrode.

_____ 1

- c) The formula for cobalt chloride is CoCl_2 .
What is the charge on the cobalt ion in CoCl_2 ?

_____ 1

- d) Solid cobalt chloride is not able to conduct.
Explain why solid cobalt chloride will not conduct electricity.

_____ 1

Total Marks 36