

Writing formulae and balancing equations

Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test lasts 45 minutes and carries 20 marks. Write every formula with correct capital letters, subscripts and brackets, and add state symbols where the question asks. Show how you checked each calculation, since credit is given for working.

Level: Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** HS-PS1-7

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Write formulae (3 marks)

Write the formula of each compound.

- Magnesium chloride (1 mark)
- Sodium sulfate (1 mark)
- Aluminium hydroxide (1 mark)

Question 2 Balance the equations (3 marks)

Balance each equation.

- $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$ (1 mark)
- $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_3$ (1 mark)
- $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$ (1 mark)

Question 3 State symbols (2 marks)

State the meaning of (aq), and give the state symbol for a gas. (2 marks)

Question 4 Precipitate of silver bromide (3 marks)

Silver nitrate solution reacts with sodium bromide solution to form solid silver bromide and sodium nitrate solution.

- Write the balanced equation with state symbols. (1 mark)
- Name the spectator ions. (1 mark)
- Write the ionic equation. (1 mark)

Question 5 Changing a subscript (2 marks)

A student balances $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$ by writing MgO_2 on the right. Explain why this is wrong and write the correct equation. (2 marks)

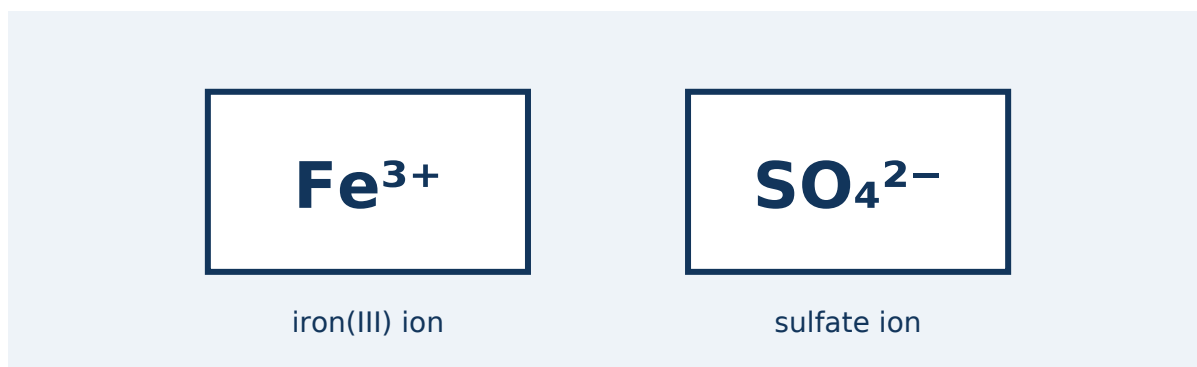
Question 6 Burning aluminium (3 marks)

Aluminium burns in oxygen to form aluminium oxide. A mass of 5.4 g of aluminium forms 10.2 g of aluminium oxide.

- Calculate the mass of oxygen that combined. (2 marks)
- Name the law that you used. (1 mark)

Question 7 Formula from ion cards (2 marks)

The ion cards show an iron(III) ion and a sulfate ion.



Deduce the formula of the compound they form and show how the charges cancel. (2 marks)

Question 8 Charge on zinc (2 marks)

Zinc nitrate has the formula $\text{Zn}(\text{NO}_3)_2$. Deduce the charge on the zinc ion. (2 marks)