

Cambridge IGCSE Chemistry (0620)
Quiz Paper – Full Syllabus Coverage (2026–2028)

Total Marks: 60 — Time Allowed: 1 hour 30 minutes

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Name: _____ Class: _____ Date: _____

Score: _____ / 60

Instructions:

- Answer **all** questions.
- Show all working clearly in the spaces provided.
- Write chemical equations with state symbols where appropriate.
- Calculators are allowed.

1. States of matter

[4]

- (a) Describe the arrangement and motion of particles in a solid, a liquid and a gas.

- (b) Explain, in terms of particles, why diffusion occurs more slowly in liquids than in gases.

2. Atoms, elements and compounds

[5]

- (a) Define an isotope.

- (b) An atom of an element has proton number 11 and nucleon number 23. State the number of protons, neutrons and electrons in this atom.

- (c) Draw a dot-and-cross diagram to show the bonding in a molecule of chlorine, Cl₂.

3. Stoichiometry

[6]

- (a) Calculate the relative molecular mass of calcium carbonate, CaCO_3 . (A_r : Ca = 40, C = 12, O = 16)

- (b) 10.0 g of pure calcium carbonate is heated strongly until no further change occurs. The equation for the reaction is: $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$ Calculate the maximum mass of calcium oxide that can be produced.

4. Electrochemistry

[5]

- (a) Define electrolysis.

- (b) Molten lead(II) bromide is electrolysed using inert electrodes. Write the half-equations for the reactions at the anode and at the cathode.

- (c) State what is observed at the anode.

5. Chemical energetics

[4]

- (a) Define exothermic reaction.

- (b) The reaction between hydrochloric acid and sodium hydroxide is exothermic. Explain, in terms of bond breaking and bond making, why this reaction is exothermic.

6. Chemical reactions

[5]

- (a) State four factors that affect the rate of a chemical reaction.

- (b) Explain, using collision theory, why increasing the concentration of a reactant increases the rate of reaction.

7. Acids, bases and salts

[5]

- (a) Define an acid in terms of proton transfer.

- (b) Write a balanced chemical equation for the reaction between dilute sulfuric acid and copper(II) oxide.

- (c) Describe how you would prepare a pure, dry sample of copper(II) sulfate crystals from copper(II) oxide and dilute sulfuric acid.

8. The Periodic Table

[4]

- (a) State the trend in the reactivity of the Group I elements as the group is descended.

- (b) Explain this trend in terms of atomic structure.

9. Metals

[5]

- (a) Place the following metals in order of reactivity, starting with the most reactive: zinc, magnesium, copper, iron.

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- (b) Describe the extraction of iron from haematite in the blast furnace. Include the relevant chemical equations.

10. **Chemistry of the environment** [4]

- (a) Name two greenhouse gases.

- (b) Explain how an increase in the concentration of greenhouse gases in the atmosphere can lead to climate change.

11. **Organic chemistry** [6]

- (a) State the general formula of the alkanes.

- (b) Draw the structural formula of ethene.

- (c) Describe a chemical test to distinguish between ethane and ethene. State the observations for each compound.

- (d) Write the equation for the complete combustion of ethane.

12. **Experimental techniques and chemical analysis**

[7]

- (a) Describe how you would separate a mixture of sand and salt to obtain pure dry samples of both.

- (b) A solution is thought to contain chloride ions. Describe a chemical test to confirm the presence of chloride ions and state the positive result.

- (c) State the colour of the flame test for sodium ions and for copper(II) ions.

End of Paper (Total marks: 60)

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