

Name:

Date:

C10 - Test 5
USING RESOURCES
Advanced

GCSE

CHEMISTRY

AQA - Combined Science

Mark

Grade

Materials

For this paper you must have:

- Ruler
- Pencil and Rubber
- Scientific calculator, which you are expected to use when appropriate

Instructions

- Answer all questions
- Answer questions in the space provided
- All working must be shown

Information

- The marks for the questions are shown in brackets

1.

Copper can be extracted using biological methods.

(a) Name **two** biological methods used to extract copper from copper ores.

For each method, name the type of organism used in the process.

Method 1 _____

Type of organism _____

Method 2 _____

Type of organism _____

(4)

(b) Give **three** reasons why biological methods are being introduced to extract copper.

1. _____

2. _____

3. _____

(3)

The biological methods produce copper compounds such as copper sulfate.

(c) Copper can be extracted from copper sulfate solution by adding scrap iron.

Explain why.

(2)

(d) Complete the chemical equation for the reaction between iron and copper sulfate solution.

Include state symbols.

_____ (____) + CuSO₄(____) → _____ (____) + _____(aq)

(2)

(e) A solution of copper sulfate contains 3.175 g of copper ions.

Calculate the number of copper ions in the solution.

Give your answer in standard form.

Relative atomic mass (A_r): Cu = 63.5

The Avogadro constant is 6.02×10^{23} per mole.

Number of copper ions = _____

(4)
(Total 15 marks)

(a) Complete the following sentence.

Elements in the central block of the periodic table, eg copper, iron and zinc, are called _____ metals.

(1)

(b) State three properties that make copper suitable for use in plumbing.

1. _____

2. _____

3. _____

(3)

(c) *In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.*

Copper can be extracted from copper ores by two methods:

Method 1 or mining and smelting

Method 2 phytomining.

The main stages in the two methods are shown in the flow diagrams.

Mining and smelting



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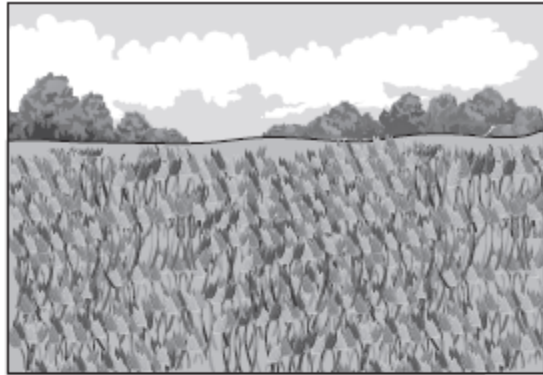
The copper ore is mined from the earth.

The copper ore is heated in a furnace with carbon (smelting).
This produces impure copper.

The copper is purified by electrolysis.

Pure copper is produced.

Phytomining



Plants are grown on soil containing low grade ores.

The plants absorb copper compounds from the soil.

The plants are burned.
The ash contains copper compounds.

Copper is extracted from a solution made from the ash by electrolysis.

Pure copper is produced.

