



Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 38

1 Key words**[4]**

Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

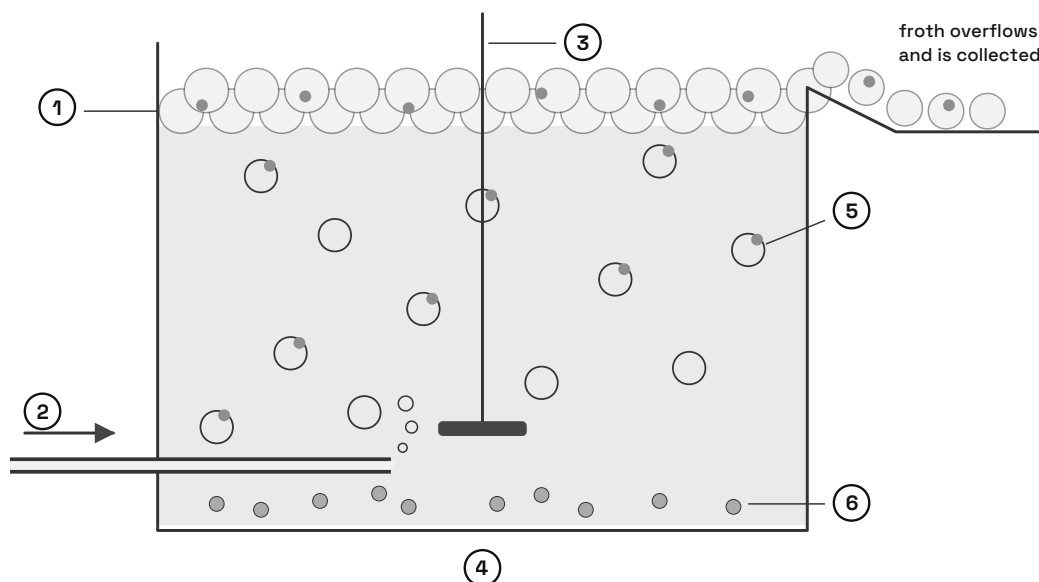
alloy calcination concentration gangue metallurgy minerals native ore roasting
slag

The elements and compounds found naturally in the Earth's crust are called _____. A mineral from which a metal can be extracted easily and at low cost is an _____ of that metal.

Unreactive metals such as gold are found in the _____ state. The unwanted sand, mud and rock mixed with an ore are called _____. Removing them is _____. A sulphide ore is heated strongly in a supply of air: this is _____. A carbonate ore is heated strongly without air: this is _____. The science of the properties, production and purification of metals is _____.

2 Label the diagram**[3]**

The drawing shows froth flotation, used to concentrate sulphide ores. Write the name of each numbered part. Each carries 0.5 mark.



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____



[5]

Choose the correct option for each of the following questions.

- Which is the main ore of iron? [1]
 - bauxite
 - argentite
 - hematite
 - pyrite
- Which metal is found in the pure state in nature? [1]
 - aluminium
 - iron
 - copper
 - gold
- Which is the first step of extracting a metal? [1]
 - smelting
 - roasting
 - concentration
 - grinding
- In which process is smelting included? [1]
 - grinding
 - refining
 - oxidation
 - reduction
- Copper glance (Cu_2S) has been concentrated. What is the next step? [1]
 - roasting, because it is a sulphide ore
 - calcination, because it is a sulphide ore
 - no oxidation needed, because it is already an oxide
 - refining

[3]

Write very short answers to the following questions.

- Name the chief ore of aluminium. [1]

- Write the chemical formula of chalcoppyrite (copper pyrite). [1]

- In electro-refining of copper, which terminal of the battery is the impure copper connected to? [1]

[6]

Write short answers to the following questions.

- a. Give a reason: all ores are minerals, but all minerals are not ores. [2]
-
-
-



[2]

[2]

[8]

Write long answers to the following questions.

[4]

[4]

[4]

Solve the following problems. Show your working.

[2]

[illegible]

Answer:



- b. A mine digs out 500 kg of pure hematite a day. How much iron can be extracted from it in a day? (Fe_2O_3 is 70% iron.) [2]

Answer:

8 Chemical equations [3]

Write the balanced chemical equation for each of the following.

- a. Zinc blende (ZnS) is roasted in air. [1]

- b. Calamine (ZnCO_3) is calcined. [1]

- c. Hematite is reduced by carbon monoxide in a blast furnace. [1]

9 Think [2]

Think, then answer.

Zinc oxide is reduced by heating it with carbon, but aluminium oxide is not; aluminium is made by electrolysis instead. Why?

10 Activity: Separating with a magnet (not marked)

Mix a spoonful each of iron filings, sand and aluminium powder (or salt, if you have no aluminium powder) on a sheet of paper. Wrap a magnet in a thin plastic bag and move it slowly over the mixture.

Substance	Pulled by the magnet? (yes / no)	Magnetic or non-magnetic?
iron filings		
sand		
aluminium powder (or salt)		

