

## Exercise N5 S4\_3B Metals

Write the date in the margin of your homework jotter.

Write the title of this Exercise as a heading: Exercise N5 S4\_3B Metals



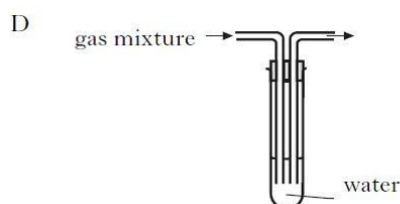
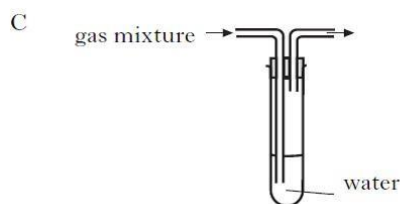
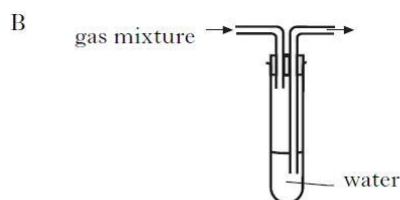
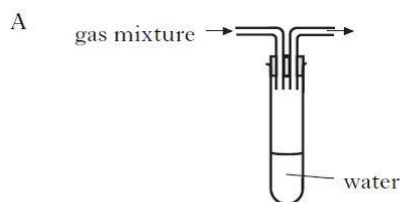
1.

Which metal can be extracted from its oxide by heat alone?

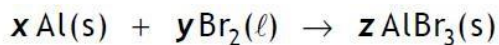
- A Lead
- B Silver
- C Tin
- D Zinc

2.

Which of the following diagrams shows the apparatus which would allow a soluble gas to be removed from a mixture of gases?



5.

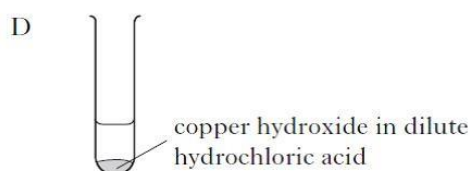
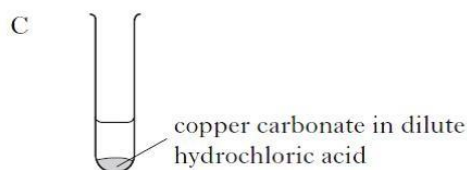
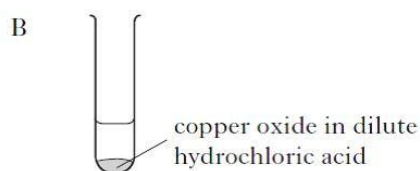
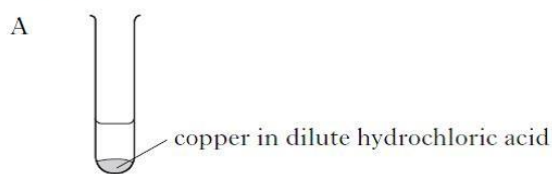


This equation will be balanced when

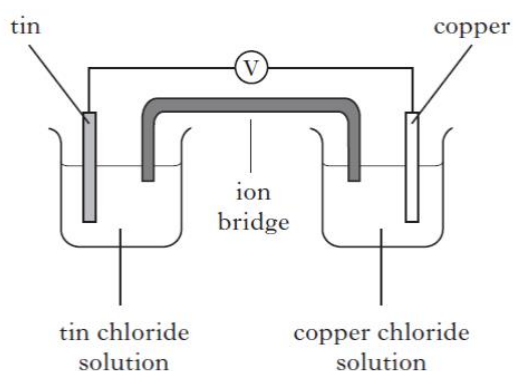
- A  $x = 1, y = 2$  and  $z = 1$
- B  $x = 2, y = 3$  and  $z = 2$
- C  $x = 3, y = 2$  and  $z = 3$
- D  $x = 4, y = 3$  and  $z = 4$ .

6.

In which of the following test tubes will a gas be produced?



3.



In the cell shown electrons flow through

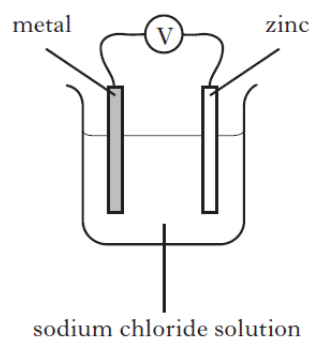
- A the solution from copper to tin
- B the solution from tin to copper
- C the wires from copper to tin
- D the wires from tin to copper.

4.

Which of the following compounds could be used as an electrolyte in an electrochemical cell?

- A Hexane
- B Copper(II) oxide
- C Calcium chloride
- D Carbon chloride

7.



Which of the following metals, when linked to zinc, would give the highest cell voltage?

(You may wish to use the data booklet to help you.)

- A Copper
- B Iron
- C Magnesium
- D Tin

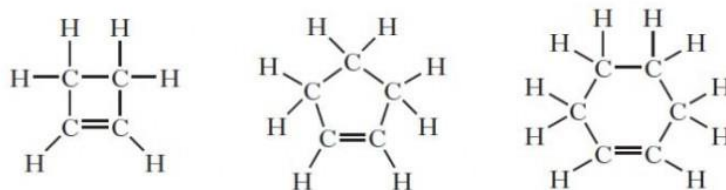
8.

What is the charge on the chromium ion in  $\text{CrCl}_3$ ?

- A 1+
- B 1-
- C 3+
- D 3-

9.

Three members of the cycloalkene homologous series are:

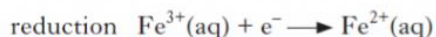
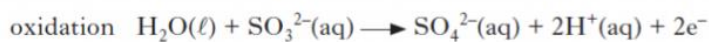


The general formula for this homologous series is

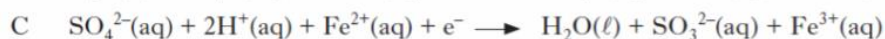
- A  $\text{C}_n\text{H}_{2n-2}$
- B  $\text{C}_n\text{H}_{2n-4}$
- C  $\text{C}_n\text{H}_{2n}$
- D  $\text{C}_n\text{H}_{2n+2}$

10.

The ion-electron equations for the oxidation and reduction steps in the reaction between **sulphite ions** and **iron(III) ions** are given below.



The redox equation for the overall reaction is



11.

(a) Strontium compounds have many uses.

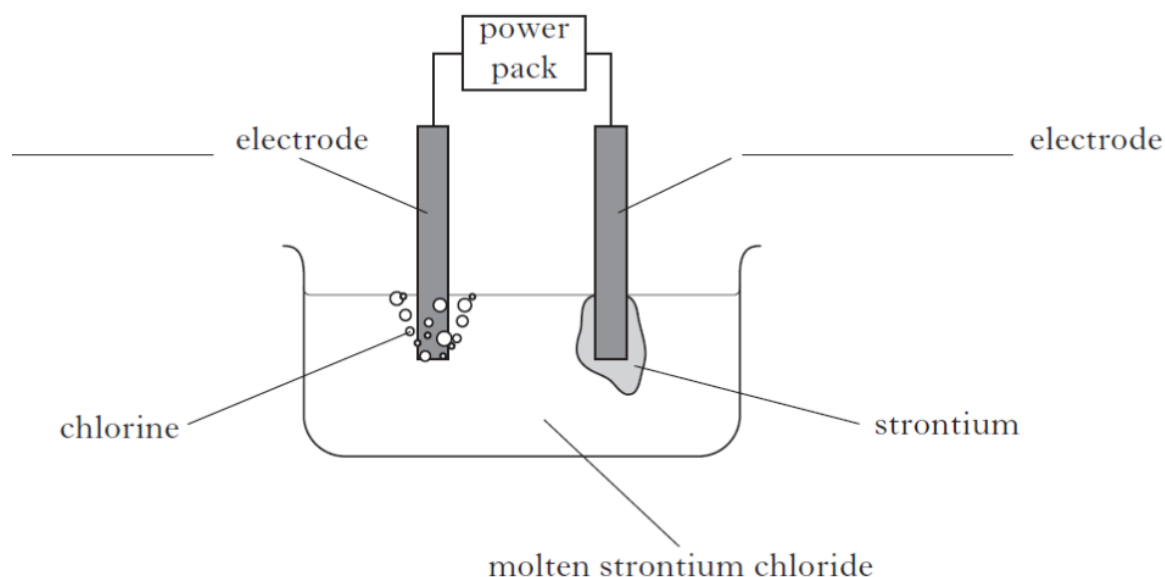
(i) Strontium chloride hexahydrate can be used in toothpaste for sensitive teeth as it plugs the holes in the tooth enamel.

This is possible because strontium has similar chemical properties to calcium.

Why does strontium have similar chemical properties to calcium?

(b) Strontium can be extracted from the compound strontium chloride using electrolysis.

Label the diagram to show the **charge** on each electrode.



12.

When aluminium is exposed to air it corrodes.

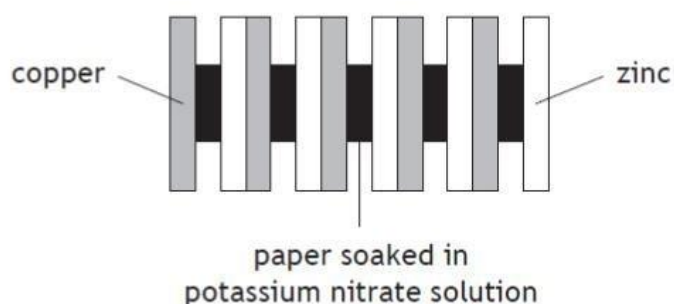
(a) The corrosion of aluminium is an example of oxidation.

Write an ion-electron equation for the oxidation of aluminium.

13.

A battery is a number of cells joined together.

(a) The diagram shows a simple battery made from copper and zinc discs separated by paper soaked in potassium nitrate solution.

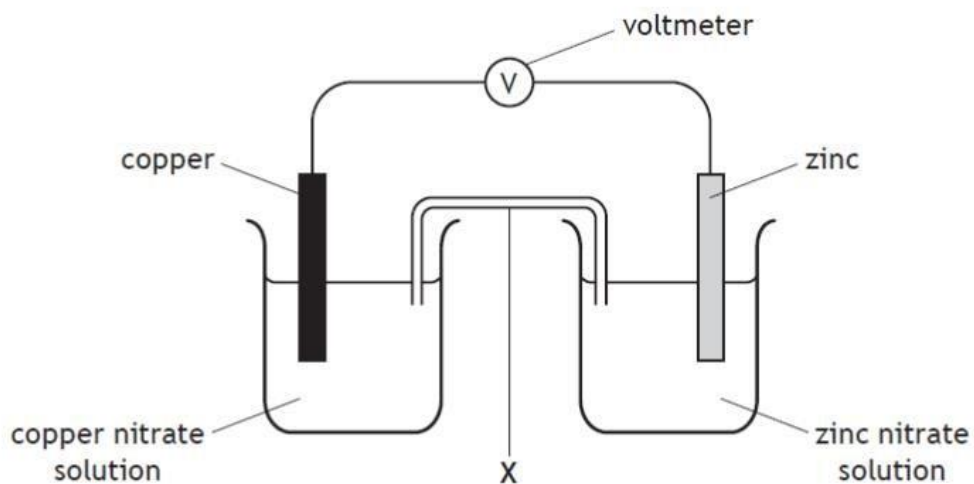


The purpose of the potassium nitrate solution is to complete the circuit.

State the term used to describe an ionic compound which is used for this purpose.

1

(b) A student set up a cell using the same metals as those used in the battery.



(i) On the diagram, draw an arrow to show the path and direction of electron flow.

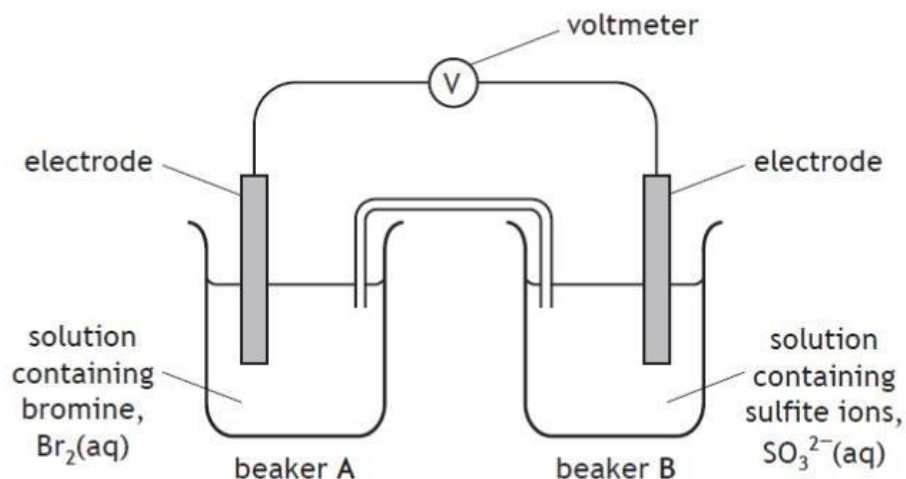
1

You may wish to use the data booklet to help you.

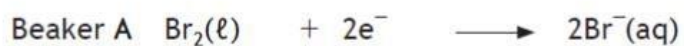
(ii) Name the piece of apparatus labelled X.

1

(c) Electricity can also be produced in a cell containing non-metals.



The reactions occurring at each electrode are



- (i) Name the type of chemical reaction taking place in beaker B. 1
- (ii) Write the redox equation for the overall reaction. 1
- (iii) Name a non-metal element which is suitable for use as the electrodes. 1



A marking guide for this Homework is available (password required).