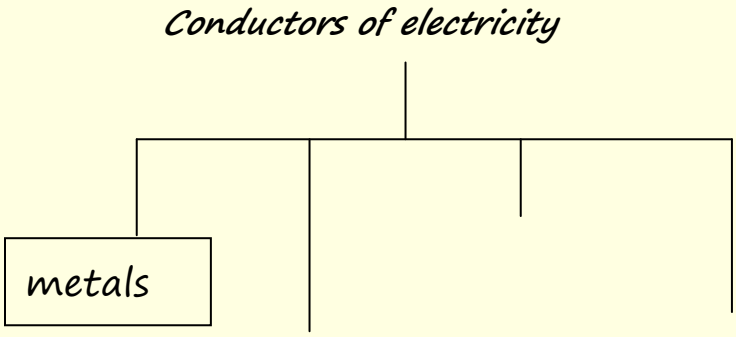
Answer all the questions below then check your answers.

1 What is electrolysis?

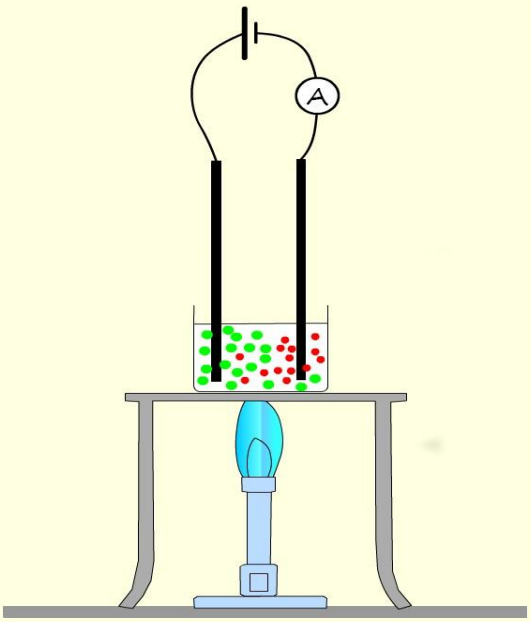
2 Complete the diagram below, which shows the four groups of substances that conduct electricity. The first type of substance, metals, has been done for you already.



3 What type of structure do ionic compounds have?

4 Why do solid ionic compounds not conduct electricity?

5 The apparatus used in an electrolysis experiment is shown opposite. In this example lead chloride is being split up in the elements that make it up.



a What elements make up lead chloride?

b On the diagram label the positive anode and the negative cathode.

c Complete the following:

Electrolysis is used to split up compounds containing _____ and non-metals up into the elements that make them up. The positive electrode is called the _____ and the negative electrode is called the _____. The metal always forms at the cathode and the non-metal always forms at the _____.

6 Complete the table below to show the products obtained at the anode and cathode when molten ionic compounds arte electrolysed.

molten ionic compound	cathode product	anode product
lead bromide		
calcium oxide		
aluminium oxide		
lithium chloride		

7 The table below is similar to the one in question 6. However this time complete the table by writing ion-electron half equations for the cathode and anode reactions? (Remember the diatomic elements!)

molten ionic compound	cathode product	anode product
lead bromide	$Pb^{4+} + 4e \longrightarrow$	
calcium oxide		$2O^{2-} - 4e \longrightarrow O_2$
aluminium oxide	$Al^{3+} +$	
Lithium chloride		

8. Where in the cell does reduction take place?

a. Where in the cell does oxidation take place?

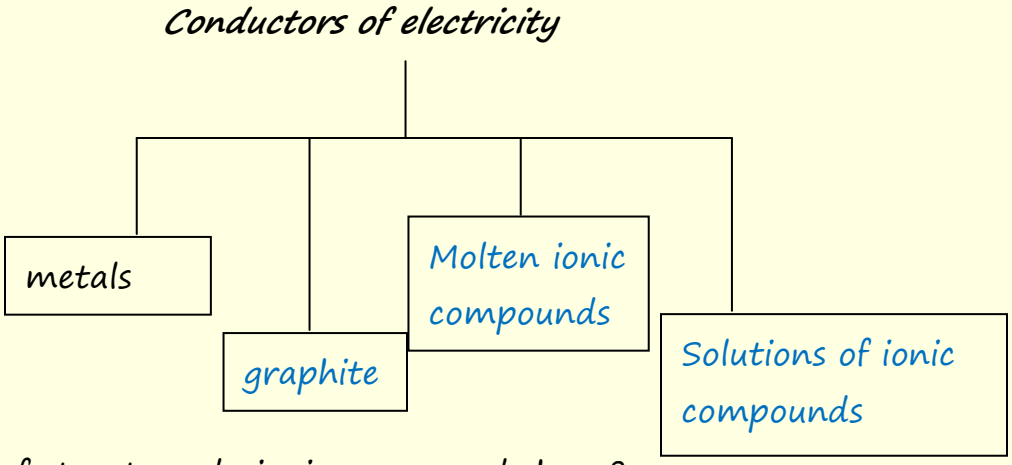
b. What is a redox reaction?

Answers

1 What is electrolysis?

Using electricity to Split up ionic compounds into the elements that make them up

2 Complete the diagram below which shows the four substances which conduct electricity. The first type of substance, metals, has been done for you already.



3 What type of structure do ionic compounds have?

Giant lattice structures

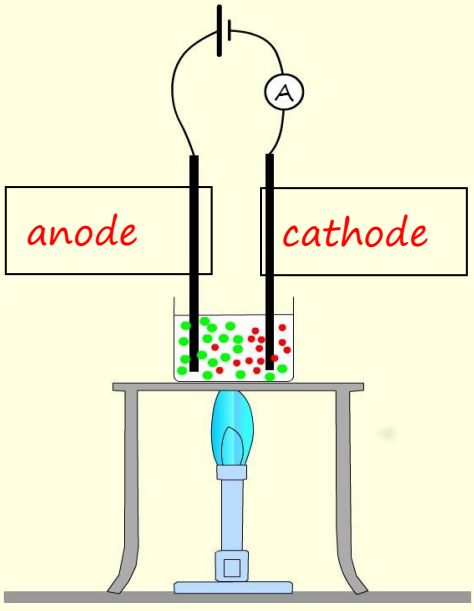
4 Why do solid ionic compounds not conduct electricity? The ions are trapped within the lattice and cannot move freely

5 The apparatus used in an electrolysis experiment is shown opposite. In this example lead chloride is being split up in the elements that make it up.

a What elements make up lead chloride?

lead and chlorine

b On the diagram label the positive anode and the negative cathode.



c Complete the following:

Electrolysis is used to split up compounds containing metals and non-metals up into the elements that make them up. The positive electrode is called the anode and the negative electrode is called the cathode. The metal always forms at the cathode and the non-metal always forms at the anode.

6 Complete the table below to show the products obtained at the anode and cathode when molten ionic compounds arte electrolysed.

molten ionic compound	cathode product	anode product
lead bromide	lead	bromine
calcium oxide	calcium	oxygen
aluminium oxide	aluminium	oxygen
lithium chloride	lithium	chlorine

7 The table below is similar to the one in question 6. However this time complete the table by writing ion-electron half equations for the cathode and anode reactions? (remember the diatomic elements!)

molten ionic compound	cathode product	anode product
lead bromide	$Pb^{4+} + 4e \longrightarrow Pb$	$2Br^{-} - 2e \longrightarrow Br_2$
calcium oxide	$Ca^{2+} + 4e \longrightarrow Ca$	$2O^{2-} - 4e \longrightarrow O_2$
aluminium oxide	$Al^{3+} + 3e \longrightarrow Al$	$2O^{2-} - 4e \longrightarrow O_2$
lithium chloride	$Li^{+} + e \longrightarrow Li$	$2Cl^{-} - 2e \longrightarrow Cl_2$

7. Where in the cell does reduction take place? Cathode, reduction is gain of electrons

a. Where in the cell does oxidation take place? Anode, oxidation is loss of electrons

b. What is a redox reaction? Reaction where one substance is oxidised and another is reduced.