



3055 BA SANGAM COLLEGE

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WORKSHEET 7

School: Ba Sangam College

Year: 11

Subject: Chemistry

Name: _____

Strand	3 - Reactions
Sub strand	3.2 – Types of Reactions
Content Learning Outcome	Analyze the different types of chemical reactions from experimental set up and chemical equations.

DOUBLE DISPLACEMENT

When two different salt solutions react forming a clear solution. The resultant salts formed are both soluble in water.

It is termed double displacement as the anions are exchanged between the two cations.

Example

Barium chloride + Sodium Nitrate → Barium nitrate + Sodium

OXIDATION-REDUCTION (redox)

Oxidation is the gain of oxygen and loss of H^+ and e^- .

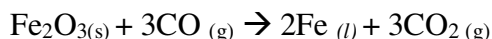
Reduction is the loss of oxygen and gain of H^+ and e^- .

As a substance is reduced the other reactant will be oxidised.

Example 1: In the extraction of metal from metal oxides using carbon, the metal oxide is reduced to the metal and carbon is oxidised to carbon dioxide.

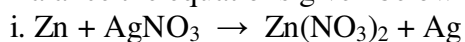


Example 2: Iron metal is produced in the Blast Furnace by the reduction of iron (III) oxide by carbon monoxide. The carbon monoxide is oxidised to carbon dioxide.

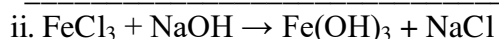


Exercise

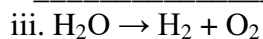
1. Balance the equations given below and identify the type of reaction shown by each equation:



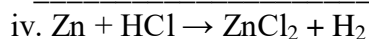
_____ (1 mark)



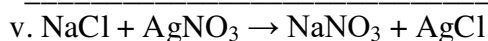
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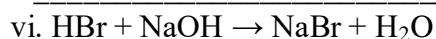
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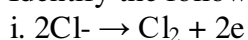


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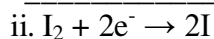


_____ (1 mark)

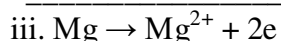
2. Identify the following equations as either oxidation or reduction.



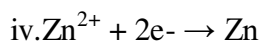
_____ (1 mark)



_____ (1 mark)



_____ (1 mark)



(1 mark)

3. The reaction of lead oxide with carbon forms lead metal and carbon dioxide.

i. Write a balanced chemical equation to represent the reaction above.

(1 mark)

ii. From the equation, determine which reactant is oxidised and which is reduced.

(1 mark)

iii. Explain why the reaction between lead oxide and carbon is called a redox reaction.

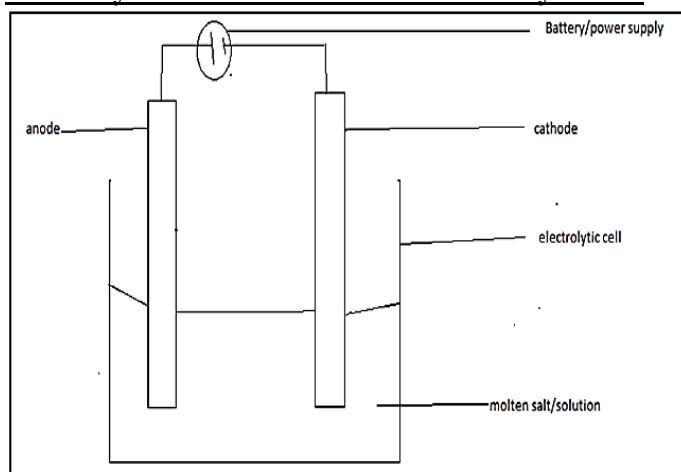
(1 mark)

Electrolysis

Electrolysis -is the decomposition of an electrolyte by passing an electric current through it.

An electrolyte is a molten salt or solution that conducts electricity.

Electrolysis is carried out in an electrolytic cell



The components of an electrolytic cell are:

1. **Electrolyte** – molten or solutions of ionic compounds. The mobile/free ions are the carriers of electric current. Examples include:

$\text{NaCl}_{(l)}$, $\text{NaCl}_{(aq)}$, $\text{H}_2\text{O}_{(l)}$, $\text{MgCl}_2_{(aq)}$, $\text{CuSO}_4_{(aq)}$.

2. **Batteries/Direct Current, DC power supply** –

source of current, creates or discharge ions in the electrolyte. The electrode potential should be large enough to drive the reactions.

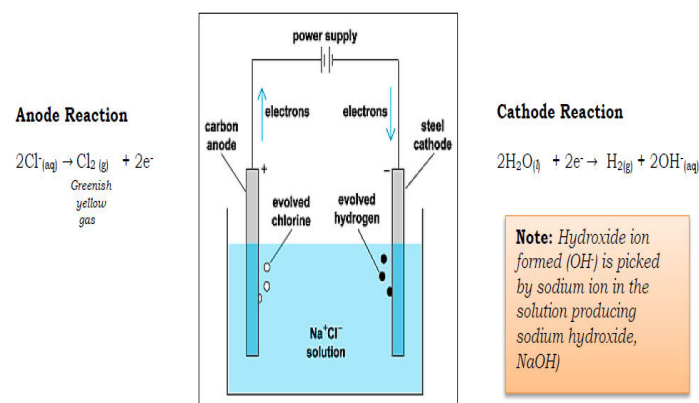
3. **Electrodes** – connects batteries/DC power supply to electrolyte. The two types are **anode** (positively charged) and **cathode** (negatively charged).

-Electrodes are usually inert or unreactive and a conductor of electricity.

-A common electrode is carbon (graphite) as it is inert and a conductor.

-Less reactive metals such as copper, iron and zinc, are used in electroplating.

Electrolysis of a salt solution



4. How does electroplating prevent corrosion?

(1 mark)

5. Study the set up given below. The iron nail is touching the zinc nail as they are tied together.

(i) Will the iron corrode? Give a reason for your answer. _____ (1 mark)

(ii) The zinc nail was removed. State an observation that you will make after a few days. _____ (1 mark)

6. Suppose you are given the following materials: A silver table spoon, copper electrodes, electrical wires, 1L beaker, 500 mL 1.0 moles/litre copper sulphate solution, AC/DC Transformer

(i) Draw a diagram of the electrolytic cell you would construct using the given materials in order to plate the silver spoon with copper.

