



IBMYP Integrated Sciences Sample Paper 2



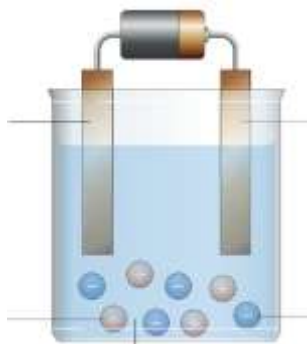
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**Group 5: Integrated Science
On-Screen Examination
Total marks: 93**

Instructions

- The on-screen examination has not yet started.
- Your time will begin once you have clicked the Start button below. Do not click Start until instructed to do so.
- Before the examination begins you are given 5 minutes to become familiar with its structure. Please navigate around the examination, taking note of the length of each task and question. You have 2 hours to complete the examination.
- There are 10 separate questions in this examination. Each question may have sub-parts. Answer all the questions in the response boxes provided. The maximum mark for this examination is 100 marks.
- As you progress through the questions, your answers are automatically saved.
- When 2 hours has ended. you will no longer be able to answer any questions.

Q1) a) Annotate the diagram appropriately from the given lines (1 mark)



Answer:

Cathode, Anode, cations, anions, electrolyte

b) What are the products formed at the negative and positive electrodes for each of these ionic compounds? (3 marks)

<i>Electrolyte</i>	<i>Negative electrode</i>	<i>Positive electrode</i>
<i>Sodium chloride</i>		
<i>Potassium iodide</i>		
<i>Magnesium Oxide</i>		

Zinc bromide		
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Answer:

Sodium chloride (NaCl):

Negative electrode (cathode): Chlorine gas (Cl₂)

Positive electrode (anode): Sodium metal (Na)

Potassium iodide (KI):

Negative electrode (cathode): Iodine gas (I₂)

Positive electrode (anode): Potassium metal (K)

Magnesium oxide (MgO):

Negative electrode (cathode): No reaction (since MgO is not an ionic compound in the molten state)

Positive electrode (anode): Oxygen gas (O₂)

Zinc bromide (ZnBr₂):

Negative electrode (cathode): Zinc metal (Zn)

Positive electrode (anode): Bromine gas (Br₂)

c) Electroplating is a process that involves depositing a layer of metal onto a conductive surface using an electric current. Mention 2 examples of electroplating (2 marks)

Chrome plating: This involves depositing a layer of chromium onto a surface using an electric current. It is commonly used to provide a shiny, corrosion-resistant surface to objects like car parts, bathroom fixtures, and kitchen utensils.

Silver plating: In this process, a thin layer of silver is electroplated onto a conductive surface. Silver-plated items, such as jewellery, cutlery, or decorative objects, provide a visually appealing and tarnish-resistant finish.

d) Deduce the formula for calcium bromide (2 marks)

Answer:

The formula for calcium bromide can be deduced by considering the charges of the ions involved. Calcium (Ca) has a charge of +2, while bromide (Br⁻) has a charge of -1.

To balance the charges, we need two bromide ions to combine with one calcium ion. This is because the positive charge of calcium (+2) needs to be neutralised by two negative charges (-1 each).

Therefore, the formula for calcium bromide is CaBr₂.



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