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| Chemistry p.102-3  Additional Science p.86-87 | Chp 6.1 Electrolysis | |
|  | What does the word electrolysis mean? |  |
| What is an electrolyte? |  |
| What property must the electrodes used in electrolysis have? Why? |  |
| Where do the positive and negative ions move to during electrolysis? |  |
| Why can’t we separate a solid using electrolysis? |  |
| Consider the electrolysis of molten copper chloride. Which ions will go to which electrode? |  |
| What you expect to see at the positive electrode?  (Hint: Think of what state chlorine is.) |  |
| **Electrolytes in solution** | Why can electrolysis of ionic substances be very difficult? |  |
| What can be done to get around this problem? |  |
| What is the problem with using solutions to perform electrolysis? |  |
| Draw the balanced symbol equation for the electrolysis of copper (II) chloride (CuCl2) dissolved in water. |  |

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| Chemistry p.104-5  Additional Science p.88-89 | Chp 6.2 Changes at the electrodes | |
|  | Do negatively charged ions gain or lose electrons at the electrode? |  |
| Do positively charged ions gain or lose electrons at the electrode? |  |
| Explain what is happening to lead ions (Pb2+) when they reach the negative electrode. |  |
| What does the term reduction mean? |  |
| Explain what is happening to the bromide ions (Br -) when they reach the positive electrode. |  |
| What does the term oxidation mean? |  |
| **HIGHER**  **Half equations** | Use the example to write the half equations for the electrolysis of CuCl2. |  |
| What does OILRIG stand for? |  |

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| **The effect of water** | What rule helps us to work out what will be formed at an electrode when using aqueous solutions? |  |
| When using aqueous ionic solutions what ions will always be attracted to the negative electrode? |  |
| If an aqueous sodium compound is split using electrolysis, what would be produced at the negative electrode? Why?  (Hint: Sodium is more reactive than hydrogen.) |  |
| What is the ‘order of discharge’ at the positive electrode? |  |
| What is given off at the positive electrode when hydroxide ions are discharged? |  |

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| Chemistry p.106-7  Additional Science p.90-91 | Chp 6.3 The extraction of aluminium | |
|  | What method is used to extract aluminium? |  |
| What ore do we get aluminium oxide from? |  |
| What is the first step in the extraction of aluminium from this raw material? |  |
| **Electrolysis of aluminium oxide** | What must be done first to the aluminium oxide? Why? |  |
| What is the melting temperature of aluminium oxide? |  |
| How can energy be saved when melting aluminium oxide? |  |
| How many electrons does each aluminium ion gain at the negative electrode to produce aluminium atoms? |  |
| How is the aluminium collected? |  |
| How many electrons does each oxide ion lose at the positive electrode to produce oxygen atoms? |  |
| Why do the carbon electrodes need to be periodically replaced? |  |
| Chemistry p.108-9  Additional Science p.92-93 | Chp 6.4 Electrolysis of brine | |
|  | What is brine? |  |
| What **three** products do we get from the electrolysis of brine? | 1. |
| 2. |
| 3. |
| What happens at the positive electrode? |  |
| Why is hydrogen and not sodium formed at the negative electrode? |  |
| Are hydrogen ions oxidised or reduced at the negative electrode? |  |
| **The remaining solution** | Why does the remaining solution become alkaline? |  |