Chemical changes

REVIEW IT!

1 Copy the table below and complete the two columns naming the products formed at each electrode.

Electrolyte	Product at cathode	Product at anode
Molten sodium chloride		
Molten aluminium oxide		
Aqueous sodium chloride solution		
Aqueous sodium sulfate solution		

2 In the electrolysis of aqueous potassium bromide solution there is a gas produced at the cathode and at the anode the solution turns yellow-orange in colour.

a Name the products produced at both electrodes.

b What solution remains after the electrolysis?

H 3 A student is investigating the strengths of acids. She takes an aqueous solution of hydrochloric acid and another of ethanoic acid. Both acids have the same concentration.

She carries out different tests on the two solutions. Two of her observations are shown in the table below:

Test	Hydrochloric acid	Ethanoic acid
pH tested using pH probe and pH meter	pH reading = 1.00	pH reading = 3.00
Add magnesium ribbon	Fast effervescence	Slow effervescence

a i What do the pH readings tell you about the relative strengths of the two acids?

ii What can you say about the relative concentrations of hydrogen ions in both solutions?

b i In the reaction with magnesium what causes the effervescence?

ii Explain the different observations with magnesium.

iii Write the ionic equation for the reaction of **both acids** with magnesium.

c Predict the colour of universal indicator solution in ethanoic acid.

4 A student was given a solution of hydrochloric acid and a solution of sodium hydroxide. He was asked to carry out a titration to find the volume of hydrochloric acid that would exactly react with 25.00 cm^3 of the sodium hydroxide solution.

a The table below shows the titration results the student obtained.

Reading	Rough titration/ cm^3	Accurate titration 1	Accurate titration 2	Accurate titration 3
Final reading/cm^3	11.00	21.50	32.30	D
Initial reading/cm^3	0.00	11.00	21.50	33.00
Titre/cm^3	A	B	C	10.80

i Why is the zero reading given as 0.00 and not 0?

ii Give the correct values for A to D in the table.

iii What is the average titration result for this experiment?

iv Which is the more concentrated solution – the hydrochloric acid or the sodium hydroxide solution? Explain your answer.