

Friday 'pHunday' Chemistry – Electrolysis #2

Name/Group: 18 M .....

Question (i)	
• Risk Assessment (identify/assess/control)	X
• Procedure (Quantitative & Qualitative/Specific tests used)	X
• Varying concentration	✓
Question (ii)	
• Anode reactions for varying concentration	✓
• Cathode reaction	✓
Question (iii)	
• Condition – <i>molten</i> sodium chloride	✓

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Name/Group: 10 J .....

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• Procedure (Quantitative & Qualitative/Specific tests used)	X
• Varying concentration	X
Question (ii)	
• Anode reactions for varying concentration	✓
• Cathode reaction	✓
Question (iii)	
• Condition – <i>molten</i> sodium chloride	NA

Name: Haywood, Yenny

Teacher: Mr. Wieding

## Electrolysis

(HSC Q29 2008, 6 marks)

A first-hand investigation was performed to observe the electrolysis of sodium chloride.

- (i) Describe an appropriate procedure. (3 marks)
- (ii) Identify the reactions that occur at the anode and at the cathode and give equations for these reactions. (2 marks)
- (iii) What condition would need to be changed to produce sodium metal as a product? (1 mark)

1) Set up a U-tube apparatus with electrodes attached (see diagram)

to a retort stand. Plug the anode into the positive terminal

and the cathode in the negative terminal of a power pack (DC).

2) Fill the apparatus up to the indicated mark (so the liquid

is at the highest reading, but not overflowing) with sodium

chloride solution (either concentrated or dilute solution - 2 mol/L

or  $< 0.5 \text{ mol/L}$ ). Add several drops of universal indicator and

ensure a visible green color can be seen.

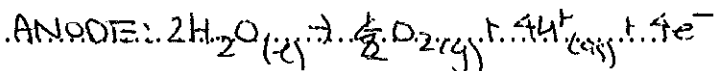
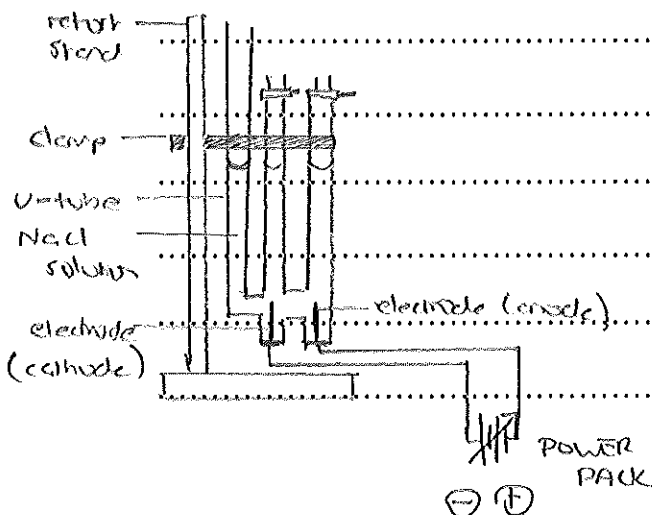
3) Turn on the power pack (with higher voltage - 12V) and

wait for at least 30 minutes for the electrolysis of sodium

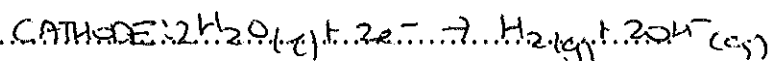
chloride to complete. Note the different colors produced (indicator)

key due to the varied reaction occurring at the cathode and anode.

Diagrams: 1) For dilute NaCl (eq.  $< 0.5 \text{ mol/L}$ )

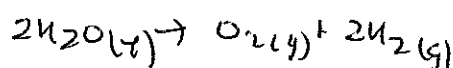
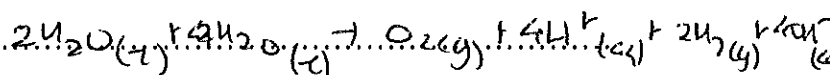


$E^\circ(\text{ox}) = -1.23 \text{ V}$



$E^\circ(\text{red}) = -0.83 \text{ V}$

$E^\circ(\text{cell}) = -2.06 \text{ V}$



Name: Mike Poon

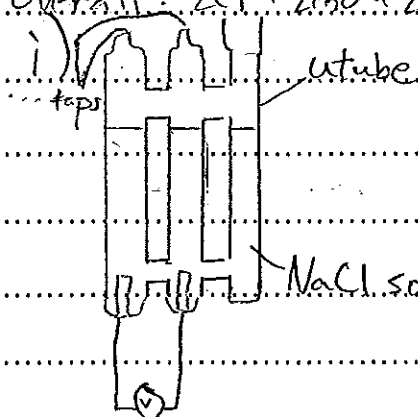
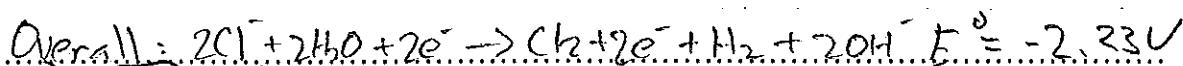
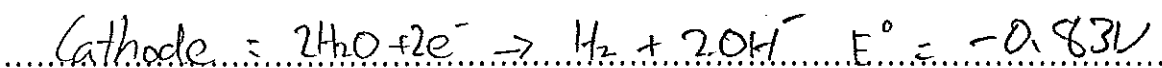
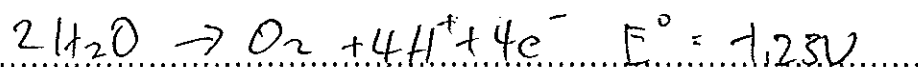
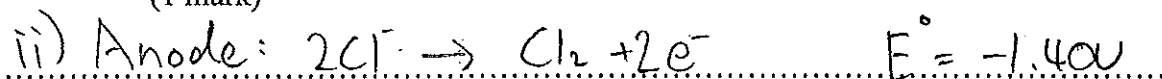
Teacher: Mr. Weeden

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① Connect the utube with DV.

② Add a few drops universal indicator into the NaCl solution

③ Pour the NaCl solution into utube

④ Turn on the DV to start electrolysis. Wait till the solution changes from green to purple.

⑤ Collect gases from the tap by using test tubes.

⑥ Do a pop test to identify the hydrogen gas.

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