

UNIT 5B PRACTICE QUIZ 3 – ELECTROCHEMICAL CELLS

Do not answer these questions on this document.

Write your answers on a sheet of paper; then click on the answer sheet provided at the end of the questions.

Use your Periodic Table and the reactivity series in your course notes.

Use this information to answer questions 1 – 3:

Xavier decides to set up a galvanic cell.

He uses an iron electrode dipped in a solution of iron chloride and a magnesium electrode dipped in a solution of magnesium chloride.

He connects the two electrodes with a light bulb and connects the two solutions with a salt bridge. The bulb lights up.

1.	Which one of the following statements is true? Mg is more reactive so oxidised. Fe is less reactive so reduced. $Mg + Fe^{2+} \rightarrow Mg^{2+} + Fe$	
	A	The iron ions are reduced and the magnesium is oxidised.
	B	The magnesium ions are reduced and the iron is oxidised.
	C	The iron ions are reduced and the chloride ions are oxidised.
	D	The magnesium ions are reduced and the chloride ions are oxidised.
1		

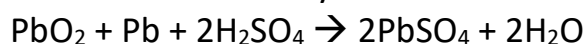
2.	Which one of the following statements is true?	
	A	The overall net ionic equation is: $Fe + Mg^{2+} \rightarrow Fe^{2+} + Mg$ No – other way round $Mg + Fe^{2+} \rightarrow Mg^{2+} + Fe$
	B	Electrons move from the magnesium electrode to the iron electrode Yes, electrons move from the oxidation electrode to the reduction electrode
	C	The magnesium electrode gets gradually bigger (no, it gets smaller)
	D	The iron chloride solution gets gradually more concentrated (no, it gets less concentrated)
1		

UNIT 5B – CHEMICAL REACTIONS II – REDOX REACTIONS

3.	Which one of the following statements is true?	
	A	This is an example of electrolysis. No, this is a galvanic cell
	B	The magnesium is the positive electrode. No, the oxidation electrode is the negative electrode in a galvanic cell
	C	The cell will still work if you take the salt bridge away. No it won't, you won't have a complete circuit
	D	In this cell, chemical energy is being converted into electrical energy.
		1

Use this information to answer questions 4 – 5:

The lead-acid battery is used in cars. The reaction which takes place is:



4.	An advantage of the lead-acid battery is that	
	A	it is easily portable because of its low density (no, it's very heavy)
	B	it can withstand a large current
	C	it doesn't contain any harmful chemicals (no, it contains Pb and H₂SO₄)
	D	it cannot be re-charged (yes it can, and anyway this would not be good)
		1

5.	A disadvantage of the lead-acid battery is that	
	A	it is very heavy
	B	it can withstand a large current (this is an advantage)
	C	it doesn't contain any harmful chemicals (no, it contains Pb and H₂SO₄)
	D	it cannot be recharged (yes it can)
		1

6.	The electrolysis of molten aluminium oxide	
	A	is how aluminium metal is made (true)
	B	produces aluminium at the anode (no it produced Al at the cathode)
	C	produces oxygen at the cathode (no it produces O₂ at the anode)
	D	is a way of producing an electric current (no, it is an electrolytic cell)
		1

UNIT 5B – CHEMICAL REACTIONS II – REDOX REACTIONS

7.	If you electrolyse brine, which is a concentrated solution of sodium chloride, you will get	
A	sodium at the cathode and chlorine at the anode (no – never Na^+ , always H^+ to the cathode in an aqueous solution)	
B	sodium at the cathode and oxygen at the anode	
C	hydrogen at the cathode and chlorine at the anode	
D	hydrogen at the cathode and oxygen at the anode (no – Cl^- to the anode if the solution is concentrated)	
		1

8.	If you electrolyse sea water, which is a dilute solution of sodium chloride, you will get	
A	sodium at the cathode and chlorine at the anode (no – never Na^+ , always H^+ to the cathode in an aqueous solution)	
B	sodium at the cathode and oxygen at the anode	
C	hydrogen at the cathode and chlorine at the anode (no – OH^- to the anode if the Cl^- solution is dilute)	
D	hydrogen at the cathode and oxygen at the anode	
		1

9.	The electrolysis of aqueous copper sulfate produces	
A	copper at the cathode and sulfur at the anode never sulfur	
B	copper at the cathode and oxygen at the anode (Cu is less reactive than H so gets reduced first)	
C	hydrogen at the cathode and oxygen at the anode	
D	hydrogen at the cathode and sulfur at the anode never sulfur	
		1

10.	It is not possible to use an aqueous solution of zinc sulfate to electroplate iron with a layer of zinc because	
A	iron is more reactive than zinc	
B	zinc is more reactive than iron	
C	zinc is more reactive than hydrogen (You can only electroplate cathodes with metals which are below hydrogen in the reactivity series)	
D	iron is more reactive than hydrogen	
		1

[Go to the answer sheet](#)