

UNIT 5B: CHEMICAL REACTIONS II - REDOX REACTIONS

WASHINGTON LATIN PUBLIC CHARTER SCHOOL

CHEMISTRY 2019-20

UNIT 5B FOUNDATION TEST - CHEMICAL REACTIONS II: REDOX REACTIONS

Answer all questions

Recommended time = 30 minutes

You must have a Periodic Table and a copy of the reactivity series.

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Name:	
Score (open response)	/18
Score (multiple choice)	/5
Bonus (Submits quiz on time and in correct format)	/27
Total:	/50

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SECTION 1 - OPEN RESPONSE

Fill in all green cells

1.	<p>The elements in Group 2 are known as the “alkali earth metals”. Calcium and magnesium are very abundant but the others are not.</p> <p>Mike dropped a small piece of magnesium metal into a beaker of hydrochloric acid (HCl) She then dropped a small piece of calcium metal into another beaker of hydrochloric acid.</p>	
(a)	Explain what she would observe when she dropped the magnesium into the acid.	2
	<p>What would happen to the Mg? A gas is produced – what do you see?</p>	
(b)	Complete the equation for the reaction taking place.	2
	<p>$Mg + 2HCl \rightarrow$ It makes magnesium chloride and hydrogen</p>	
(c)	Identify the atom oxidised and the atom reduced in this reaction.	2
	<p>Atom oxidised: Atom reduced: The more reactive atom is oxidised, the less reactive atom is reduced; nothing happens to the Cl</p>	
(d)	Will the reaction between calcium and hydrochloric acid be faster or slower than the reaction between magnesium and hydrochloric acid? Explain your answer.	3
	<p>Which atom is higher in the reactivity series? Ca or Mg? Why?</p>	
TOTAL		9

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2.	<p>Gabi set up a galvanic cell. On one side she immersed an iron (Fe) electrode into a solution of iron chloride (FeCl₂). On the other side she immersed a zinc (Zn) electrode into a solution of zinc chloride (ZnCl₂).</p> <p>She connects the electrodes with a wire and a light bulb. She connects the solutions with a salt bridge. When she does this the bulb lights up.</p>		
	(a)	Complete the equation for the overall cell reaction taking place in this cell	
		Zn + FeCl ₂ → makes zinc chloride and iron	2
	(b)	Identify the atom oxidised and the atom reduced.	
		Atom oxidised	The more reactive atom
		Atom reduced	The less reactive atom
	(c)	Explain why the bulb lights up.	
		Why do bulbs light up? What is moving?	2
	TOTAL		6

3.	Christian decided to electrolyse an aqueous solution of copper sulfate.		
	(a)	Name the element produced at the cathode during this electrolysis.	
		Either hydrogen or copper – which is less reactive	
	(b)	Name the element produced at the anode during this electrolysis	
		Sulfate doesn't get oxidised so it must be hydroxide ions – what element do they turn into?	
	(c)	Which of the above elements is produced as a result of reduction?	
		Reduction happens at the cathode	
	TOTAL		3

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SECTION 2 - MULTIPLE CHOICE

**Do not answer these questions on this sheet
Make a note of your answers and enter them in the answer sheet.**

4.	Which of the following will happen when a piece of copper metal is dropped into a solution of silver nitrate? Copper is more reactive than silver, so there will be a displacement reaction	
	A	There will be no reaction.
	B	A gas will be produced.
	C	Copper nitrate and silver will be formed.
1		

5.	Which of the following is not true of electrolytic cells? In electrolytic cells we use electricity to force a chemical reaction to take place	
	A	Oxidation takes place at the anode.
	B	Reduction takes place at the cathode.
	C	Electrical energy is converted into chemical energy.
	D	Chemical energy is converted into electrical energy.
1		

6.	Which of the following statements about lithium-ion batteries is untrue? You know this – you have one in your hand most of the time	
	A	They are cheap.
	B	They can be easily recharged.
	C	They are used in almost all cellphones.
1		

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7.	Which of the following statements about the electrolysis of molten aluminium oxide is untrue? Metals form at the cathode, non-metals at the anode; it is not easy to melt ionic compounds	
A	Aluminium will form at the cathode.	
B	The process is very cheap.	
C	Oxygen will form at the anode.	
1		

8.	What will be the electrode products when a concentrated aqueous solution of sodium chloride (brine) is electrolysed? Hydrogen is less reactive than sodium Chlorine is produced if the solution is concentrated; otherwise oxygen is produced	
A	Sodium at the cathode, chlorine at the anode.	
B	Sodium at the cathode, oxygen at the anode.	
C	Hydrogen at the cathode, chlorine at the anode.	
1		

End of Test

[click here to go straight to the answer sheet and exit ticket](#)