

UNIT 5B: CHEMICAL REACTIONS II - REDOX REACTIONS

WASHINGTON LATIN PUBLIC CHARTER SCHOOL

CHEMISTRY 2019-20

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

Answer all questions

Recommended time = 45 minutes

BAHATI NJEMA!

Name:	
Score	/19
Bonus (Submits quiz on time and in correct format)	/11
Total:	/30

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Fill in all green cells

1.	<p>Magnesium, zinc and silver are all metals.</p> <p>Zinc metal is obtained by heating zinc oxide (ZnO) with carbon. Magnesium metal is obtained by the electrolysis of molten magnesium chloride (MgCl₂) Silver metal occurs naturally but is rare.</p>	
(a)	<p>When a piece of zinc is dropped into a beaker containing hydrochloric acid, the following reaction takes place: $\text{Zn(s)} + 2\text{HCl(aq)} \rightarrow \text{ZnCl}_2\text{(aq)} + \text{H}_2\text{(g)}$. State what you would observe during this reaction.</p>	
	<p>Zn would dissolve You would see bubbles/fizzing</p>	1 1
(b)	State what is oxidised and reduced in this reaction.	
	<p>Zn is oxidised (from 0 to +2) H is reduced (from +1 to 0)</p>	1 1
(c)	<p>When a piece of silver is dropped into a beaker containing hydrochloric acid, no reaction takes place. Explain why no reaction takes place.</p>	
	<p>Silver is below hydrogen in the reactivity series (or silver is very unreactive)</p>	1
(d)	Write a possible equation for the reaction between zinc oxide and carbon.	
	<p>$\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$ or $2\text{ZnO} + \text{C} \rightarrow 2\text{Zn} + \text{CO}_2$</p>	2
(e)	Explain why magnesium cannot be extracted by reacting magnesium oxide with carbon.	
	<p>Magnesium is above carbon in the reactivity series (or magnesium is too reactive)</p>	1
(h)	What substance is produced at the cathode during the electrolysis of molten magnesium chloride?	
	<p>Magnesium</p>	1
(i)	What substance is produced at the anode during the electrolysis of molten magnesium chloride?	
	<p>Chlorine</p>	1
TOTAL		10

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2.	<p>One of the first Galvanic cells invented was called a LeClanché cell. The simplified electrode half-equations for this cell are as follows: Zn electrode: $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$ MnO₂ electrode: $\text{MnO}_2 + 2\text{H}_2\text{O} + \text{e}^- \rightarrow \text{Mn}^{3+} + 4\text{OH}^-$</p>		
	(a)	Identify the positive electrode, the negative electrode and the direction of electron flow between the electrodes	
		positive electrode: MnO ₂	1
		negative electrode: Zn	1
		direction of electron flow: From Zn to MnO ₂	1
	(b)	Which common battery still uses a modified version of the LeClanché cell?	
		Alkali batteries	1
	(c)	State the main disadvantage of this cell.	
		Non-rechargeable	1
	TOTAL		5

3.	<p>Brine is a saturated solution of aqueous sodium chloride. Brine is a common substance widely used in food preservation. The electrolysis of brine is an important commercial process.</p>		
	(a)	Name the substance produced at the cathode during the electrolysis of brine.	
		hydrogen	1
	(b)	Name the substance produced at the anode during the electrolysis of brine	
		chlorine	1
	(c)	How would the products be different if molten sodium chloride was electrolysed? Give a reason for your answer.	
		You would get sodium at the cathode instead of hydrogen Because there is no water in molten sodium chloride	1 1
	TOTAL		4

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End of Test - [click here to go straight to the exit ticket](#)