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| **WASHINGTON LATIN PUBLIC CHARTER SCHOOL**  **CHEMISTRY 2019-20**  **UNIT 5B PRACTICE TEST - CHEMICAL REACTIONS II: REDOX REACTIONS**  Answer all questions  Recommended time = 45 minutes  BAHATI NJEMA!   |  |  |  |  | | --- | --- | --- | --- | |  | Name: |  |  | |  | Score | /27 |  | |  | Bonus (Submits quiz on time and in correct format) | /13 |  | |  | Total: | /40 |  | |

Fill in all green cells

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1.** | Magnesium, zinc and silver are all metals.  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. | | | |  |
| (a) | Explain what you would **observe** when a piece of zinc is dropped into a beaker containing hydrochloric acid. | | |  |
|  |  | | | 2 |
| (b) | Explain what you would **observe** when a piece of silver is dropped into a beaker containing hydrochloric acid. | | |  |
|  |  | | | 1 |
| (c) | Write equations for any reactions occurring. | | |  |
|  |  | | | 2 |
| (d) | State what is oxidised and reduced in any equation you have written above. | | |  |
|  |  | | | 2 |
| (e) | Explain why zinc and silver react differently with hydrochloric acid. | | |  |
|  |  | | | 2 |
| (f) | Write a possible equation for the reaction between zinc oxide and carbon. | | |  |
|  |  | | | 2 |
| (g) | Explain why magnesium cannot be extracted by reacting magnesium oxide with carbon. | | |  |
|  |  | | | 1 |
| (h) | Write a half-equation for the reaction taking place at the cathode during the electrolysis of molten magnesium chloride. | | |  |
|  |  | | | 2 |
| (i) | What substance is produced at the anode during the electrolysis of molten magnesium chloride? | | |  |
|  |  | | | 1 |
| TOTAL | | | | 15 |
| **2.** | 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: Zn → Zn2+ + 2e-  MnO2 electrode: MnO2 + 2H2O + e- → Mn3+ + 4OH-  The MnO2 electrode is actually made of graphite coated with a layer of MnO2. | | | |  |
| (a) | Identify the positive electrode, the negative electrode and the direction of electron flow between the electrodes | | | 3 |
| positive electrode: | |  |
| negative electrode: | |  |
|  | direction of electron flow: | |  |
| (b) | Explain why the MnO2 electrode is not made of pure MnO2. | | | 1 |
|  |  | | |
| (c) | Which common battery still uses a modified version of the LeClanché cell? | | | 1 |
|  |  | | |
| (d) | State the main disadvantage of this cell. | | | 1 |
|  |  | | |
| TOTAL | | | | 6 |

|  |  |  |  |
| --- | --- | --- | --- |
| **3.** | 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. | |  |
| (a) | Name the substance produced at the cathode during the electrolysis of brine. |  |
|  |  |
| (b) | Name the substance produced at the anode during the electrolysis of brine |  |
|  |
| (c) | How would the products be different if sea water was electrolysed? Give a reason for your answer. |
|  |  |  |
| (d) | How would the products be different if molten sodium chloride was electrolysed? Give a reason for your answer. |  |
|  |
| TOTAL | | 6 |

**End of Test -** [**click here to go straight to the exit ticket**](https://docs.google.com/forms/d/e/1FAIpQLSdJvV2mRnVb6TfMC9rXaSahiyu4J9QfAzGtV90HvW9piCr2lQ/viewform?usp=sf_link)